THE NEWSWEEKLY OF INFORMATION SYSTEMS MANAGEMENT
November 18, 1991 · Vol. XXV · No. 46 · 138 Pages · $2/Copy · $48/Year

COMPUTERWORLD

Amdahl alerts customers to defective disk drives

Company reports high failure rates for 6380 K

BY JEAN S. BOZMAN
CW STAFF

SUNNYVALE, Calif. — Amdahl Corp. acknowledged last week that there are defects in its 6380 Model K disk drive and said 1,000 customers need to install disk enclosure replacements to prevent potential head crashes.

Amdahl told industry analysts that it had written a letter to its 6380 K disk-drive customers, warning them of unacceptably high failure rates in the affected disk drives, which were manufactured between June and September 1991. The 7.5G-byte drives, designed by Amdahl engineers, were made at a Fujitsu Computer Products of America, Inc. factory in Hillsboro, Ore., Amdahl said.

"One lessor told us he had experienced [several] head crashes," said Robert Callery, a senior storage analyst at Technology Investment Strategies Corp. in Framingham, Mass. Callery said Amdahl told him there had been a temporary shutdown of the production lines where the 6380 K drives were made. Amdahl would not confirm the shutdown. As of last week, the Oregon disk-drive factory was in full production, Amdahl spokesman Bill Stewart said.

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DEC, Microsoft tighten ties

BY SALLY CUSACK
and ELISABETH HORWITT
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp. is expected to announce tomorrow an alliance with Microsoft Corp., along with a slew of products that nail its distributed client/server strategy firmly to Microsoft's Windows 3.0 environment.

Users applauded the upcoming announcements, which target individuals in a work-group environment who want to share resources across a local-area or a worldwide network.

"This alliance makes us feel that there will be more integration between the two platforms," said Richard L. Krohe, manager of technology architecture at London Life Insurance Co. in London, Ontario.

"We are a big user of DEC equipment for our middle-tier LAN, and we are also big PC users," Krohe said.

A key element of the upcoming DEC announcements, according to internal documents, is Teamlinks for Pathworks Version 1. The product is said to integrate DEC's Pathworks client/server platform with Windows 3.0, giving Windows applications access to a variety of services, including CCITT X.400-compliant electronic mail, shared files, document conversion, database access and group conferencing.

Client comes first

DEC's Network Application Support will provide the link between the client application and services.

The vendor's Decquery product, working in concert with NAS, will enable Windows 3.0 applications to access a variety of databases, DEC said. These will include not only DEC RDB and RMS files on a DEC VAX/VMS server but also IBM's

Continued on page 115

Vaxing windows

Highlights of the DEC/Microsoft alliance

- **Integration of DEC's Pathworks with Windows 3.0.**
- **VAX report generator for Excel and Dbase files.**
- **DEC's All-In-1 services distributed over LAN systems.**
- **Apple Macintosh client access to All-In-1 services.**

CW Chart: Michael Siggins

Citicorp overhauls corporate network

BY JOANIE M. WEXLER
CW STAFF

NEW YORK — Financial giant Citicorp is embarking on a worldwide project to consolidate more than 100 disparate networks into an infrastructure expected to save the firm $100 million a year in telecommunications costs by 1993.

The effort is part of a mission to slash corporatewide annual operating expenses by $1.5 billion by 1993 at the beleaguered $225 billion bank holding company. The firm's cost-cutting crusade includes ongoing data center consolidation, local-area network integration and network management activities that could lead to outsourcing of nonstrategic operations. No outsourcing decisions have been announced yet.

The network consolidation theme will translate into a reduced work force, said Colin Crook, chairman of Citicorp's corporate technology committee, although he said it was too early to speculate on numbers.

Crook *sees savings from consolidation*

Citicorp said the decentralized nature of its business, which has long allowed it to bring many innovative services to market quickly, "was good for many years."

Now, emerging technologies indicate that "we're going to be better off by consolidation," said Ira Rimerman, head of Citicorp administration and corporate infrastructure.

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Best deal

Which mainframes offer the best cost per processing cycle?

See Buyers' Scorecard page 78

Product	Score*
Highest possible score: 100	
Amdahl 5990 and 5995	87
Hitachi EX series	85
IBM ES/9000	77
Bull HN DPS 90 and 9000	77
Unisys 2200 and A17	76
IBM 3090	68

*Based on 30 users per product group. Scores are based on average of 1-to-10 ratings, where 10 is best.

CW Chart: Janell Genovese

PC buyers hold out for more

Hardware demand hardly affected by price wars

BY CAROL HILDEBRAND
and CHRISTOPHER LINDQUIST
CW STAFF

Increasingly aggressive price-cutting combined with a depressed economy have created a vicious cycle trapping desktop hardware vendors into so-far futile price wars designed to tempt unresponsive users. With the recession exacting its toll on hardware budgets, however, most user wallets are shut tight.

While hardware prices have dropped so low as to produce an Intel Corp. I486-based clone for about $2,000, the pickings on the software side are considerably richer.

The move away from DOS has resulted in a tug-of-war anchored by dirt-cheap competitive upgrades as vendors vie to shift market share to their corner. It is working. In fact, a recent Software Publishers Association bulletin cited an increase in software sales to $1.44 billion for the third quarter, up 22.2%

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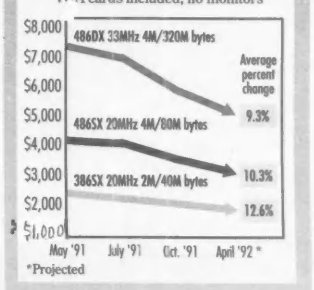
Slip-sliding away

Plummeting street prices are no godsend

Average desktop street prices

VGA cards included, no monitors



*Projected

Source: International Data Corp. CW Chart: Janell Genovese

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Moving applications off the mainframe and onto servers has United Airlines flying high. Page 6.

AT&T readies a launch into frame-relay services. Page 8.

Microsoft moves aggressively with new and upgraded applications. Page 115.

DEC to market the Macintosh in Europe. U.S. next? Page 115.

Product Spotlight — Discounts abound in the mainframe market, but 'buyer beware' has never rung more true. Page 71.

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"A single point of failure is the nightmare that you constantly worry about."

COLIN CROOK
CITICORP

On installing additional alternate routes in Citicorp's network design. See story page 1.

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The 5th Wave

AFTER SPENDING NINE DAYS WITH 12 DIFFERENT VENDORS AND READING 26 BROCHURES, DAVE HAD AN ACUTE ATTACK OF T.O.S.- TOXIC OPTION SYNDROME.
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EXECUTIVE BRIEFING

■ **A soft mainframe market equals steep discounts** — as high as 40% on the latest technology from the large systems players. Mainframe sales declined nearly 5% last year. Although recent announcements are expected to fuel sales in the next year, growth forecasts are only in the single digits, making vendors willing to negotiate not only on price but also on add-ons, education and services. **Page 71.**

■ **PC price wars are expected to continue** for at least six months, as new discounting by IBM and Compaq creates a ripple effect downward. But competition may be the death of some small clone makers. Analysts advise holding off on purchases as long as possible to get the best deal. **Page 1.**

■ **Downsizing takes off at United Airlines**, where a production scheduling application has been moved from a 3090 mainframe to a network of Unix servers. **Page 6.**

■ **DEC and Microsoft will strengthen ties** with a plan to link Windows more closely to DEC's client/server architecture. **Page 1.**

■ **Paine Webber plans to shift its focus** from mainframes to a client/server architecture and expects to be developing almost all of its new applications for that platform within five years. **Page 43.**

■ **Citicorp hopes to slash communications costs** by $100 million a year as a result of a plan to integrate disparate global networks. First step: consolidating bandwidth usage into one global network to eliminate wasted network capacity. **Page 1.**

■ **Globalization will spawn** a host of security problems, according to security experts. Conference goers say businesses need to pay greater heed to securing giant networks as they expand them. **Page 114.**

■ **Computer Associates buys another spreadsheet**, but analysts say the acquisition of Access Technology's 20/20 and other products isn't likely to boost CA's lackluster performance in the spreadsheet market. **Page 4.**

■ **The next generation of Ingres'** database management system rolls out, with analysts praising Ingres' ability to release on more than a dozen platforms at once. **Page 12.**

■ **It isn't easy to hook together electronic-mail networks,** but an industry group's pilot project may lead to better connections and directory access. **Page 53.**

■ **IS departments** see little need for new protections against sexual harassment, despite publicity from the Clarence Thomas hearings. **Page 65.**

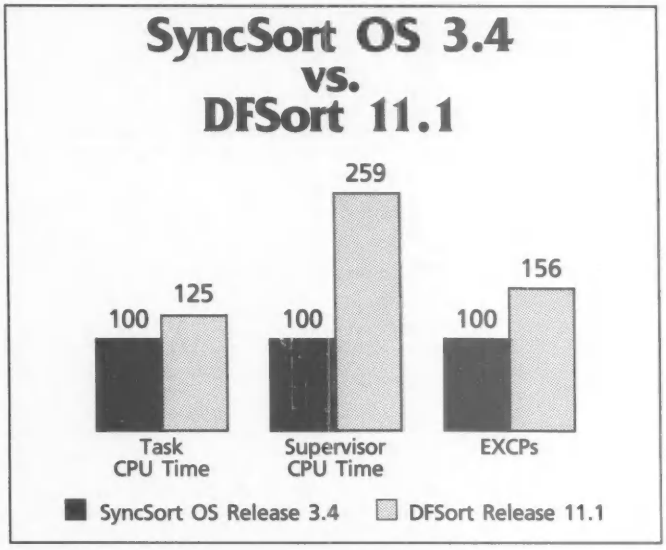
■ **The new machines are nice**, but DEC users aren't rushing to buy the company's enhanced VAX systems. **Page 29.**

■ **How much you negotiate** and what you negotiate for during the hiring process depends on where you are in your career development. **Page 100.**

■ **By examining the before and after figures** for a company's cost, time and work defects, CSC Index claims, management can see the benefits of its re-engineering efforts. **Page 65.**

■ **On site this week:** Micro-to-mainframe connections are helping police departments eliminate one step in getting up-to-date information to officers in the field. **Page 59.** Sun Microsystems workstations and an expert system are helping controllers at Federal Express juggle flight schedules. **Page 45.** A three-year rework of major applications was highlighted by a new trading system at the Coffee, Sugar & Cocoa Exchange in New York. **Page 33.** The collective combat knowledge of the U.S. Marine Corps from the Halls of Montezuma on down is going online via a mainframe-based optical disc system. **Page 37.**

THE BEST KEEPS GETTING BETTER.



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CA seeks spreadsheet share via Access buy

BY JOHANNA AMBROSIO
CW STAFF

GARDEN CITY, N.Y. — Computer Associates International, Inc.'s acquisition of most of Access Technology, Inc. last week will probably not be enough to shore up what has been a scattershot and largely ineffective approach to the spreadsheet market, analysts said.

The cash acquisition, the value of which was not disclosed, includes Access Technology's 20/20 spreadsheet and associated tools, Vivid presentation graphics package and Forcomment Document Review Groupware. All of the products run on Digital Equipment Corp. VAXs, though Forcomment is also available on MS-DOS computers. Certain Access Technology packages, including fourth-generation languages, were not part of the deal.

Access Technology, a Natick, Mass.-based unit of Compuserve, Inc., reported 1990 sales of $40 million and had 400 employees as of early this year. CA said Access Technology has more than 750,000 licensed sites worldwide.

CA's spreadsheet arsenal already includes CA-Supercalc, a DOS-based package that CA picked up with its acquisition of Sorcim Corp. in May 1984, and Compete, a modeling tool CA acquired in January 1991.

At the time of the Sorcim acquisition, Supercalc was one of the top-selling spreadsheets and remains one of the 20 most installed personal computer packages of all time, according to Computer Intelligence/Infocorp, a La Jolla, Calif., market research firm.

However, the situation "is not encouraging for CA," said Jack McGrath, a spreadsheet consultant in Hingham, Mass. "They just can't seem to penetrate the market."

Buyers dwindling

Supercalc has about 5% of the installed PC spreadsheet base, said Sanjay Kumar, senior vice president at CA. But a Computer Intelligence survey of large users showed that between October 1990 and September 1991, fewer than 1% of respondents purchased Supercalc.

One reason for CA's spreadsheet shortcomings is that CA's primary focus is still on mainframe software, and Lotus Development Corp., Microsoft Corp and Borland International, Inc. "spend a lot more time and energy courting resellers," noted Dan Ness Jr., Computer Intelligence's microcomputer industry analyst.

Kumar disputed that view, saying, "Supercalc has always held its own, and we're very happy with how it's doing." He said sales have picked up since February, when CA slashed Supercalc's suggested retail price from $495 to $149, but he would not disclose details.

IBM's OS/2 2.0 delay may be unlikely blessing

BY ROSEMARY HAMILTON
CW STAFF

After years of fighting a credibility problem with its OS/2 desktop operating system, IBM may end up actually gaining a few points from a very unlikely source: a product delay.

Several OS/2 customers contacted last week said IBM's plan to delay a full-blown Release 2.0 until March 1992 and provide a base-level version for limited availability next month fits with their own implementation plans.

Customers said the option of delaying all Release 2.0 deliveries until next year could have fouled up some project plans. At the same time, a year-end shipment of a complete, but possibly buggy, product would have been another OS/2 setback.

"They were conscious that people like us had made promises to our users," said George Oliver, manager of information delivery technology at the Royal Bank of Canada in Toronto. "I think they bent over backwards, and it was a good move."

Oliver said he wants the December release because it will give him all the functions he currently needs. The full-blown Release 2.0 will include the reported seamless integration for Microsoft Corp. Windows applications in an OS/2 environment. Oliver said he has only a few Windows applications, so he is not too anxious for this capability.

"We have projects planned for that December code drop," Oliver added. "It will help us get started early."

Last month, IBM said it would delay the complete Release 2.0 by three months because it wanted to provide a stabilized version of all the fixes beta-test users have requested.

"We didn't have a big concern about it being late," said Cary Serif, manager of applied technology at Huntington National Bank in Columbus, Ohio. "We understand the need to make it bulletproof."

Not overly anxious

Other customers contacted last week said they would like to receive the limited availability version to test it, but they are not desperately waiting for the full-blown version.

"There are a few isolated cases that are heavy development shops, and those people got a little stung by the three-month delay," said Scott Stein, director of end-user computing research at Technology Investment Strategies Corp. in Framingham, Mass. "The general feeling is it's not a big deal that they didn't deliver at the end of the year."

Stein said IBM's plan to provide the limited availability version next month should help the OS/2 credibility issue. "They did it because in April they made a promise to the world that they'd be the only 32-bit operating system available in 1991," Stein said. "They had to have something because all their marketing and direction was based on statements made that day."

Banc One Services Corp., also based in Columbus, Ohio, is rolling out a several-phase project that is based on OS/2. The bank has been testing beta versions of Release 2.0 and "plans to deploy it in all the branches," said Terry Lowder, vice president of the advanced technology group at Banc One. However, the first phase of the project, which is under way now, can be accommodated by Release 1.3, he said.

Phase two will provide the graphical user interface for the workstations and will require the Workplace shell that is part of Release 2.0. "We need [Release 2.0] early for development but not for production," he said. "We'll wait for the March release for that."

Other customers are interested in getting extra time to test-drive the release. The Illinois Department of Commerce and Consumer Affairs hopes to "get in under the new Presentation Manager shell," said Ron Roy, manager of the division of information resource management. When asked if he needed a full-blown Release 2.0 immediately, Roy said, "Not really."

"We are quite happy with 1.3, although there is significant improvement in CPU cycles in 2.0," he added.

Windows vs. OS/2, again

As of last week, 170 developers have taken Microsoft up on its offer of a Windows Software Development Kit (SDK) to replace an OS/2 2.0 SDK that it will stop supporting early next year.

However, the Microsoft numbers do not necessarily show a rejection of OS/2. Some developers contacted last week said they were interested in IBM's counteroffer of a free tool kit as well.

In a memo to customers last month, Microsoft said it would stop supporting the Release 2.0 SDK early next year and offered a choice of either a free Windows kit replacement or a $750 rebate to the approximately 1,600 licensees of the $2,600 OS/2 product [CW, Nov. 11].

Earlier this month, IBM countered Microsoft by offering a free set of beta-version tools for developers holding a Microsoft SDK license. An IBM spokesman said the company did not yet have a count of how many developers had signed up.

Jody Snodgrass, group market manager of developer programs at Microsoft, said a total of 236 developers had responded to Microsoft's OS/2 2.0 SDK memo and of that group, 72% opted for the Windows kit while the remainder took the rebate.

"It means they've decided they'll be doing Windows development, and it means they chose it over the refund," she said.

Two developers contacted last week had already taken the Windows option but wanted more information on the IBM offering as well. "I would like to have both and install them on different machines and play with both of them," said Gregory Reid, president of Gregory Co. in New York. "I'd like to see for myself which is the better platform."

A corporate developer who requested anonymity said he took the Windows option unaware of IBM's offer. "If I had known more, I may have been inclined to take that," he said.

Also last week, both firms held firm to their position that the other is portraying an inaccurate picture of the SDK support issue. Microsoft maintains it had to stop because IBM wasn't delivering key OS/2 software on a timely basis.

ROSEMARY HAMILTON

COMPUTERWORLD

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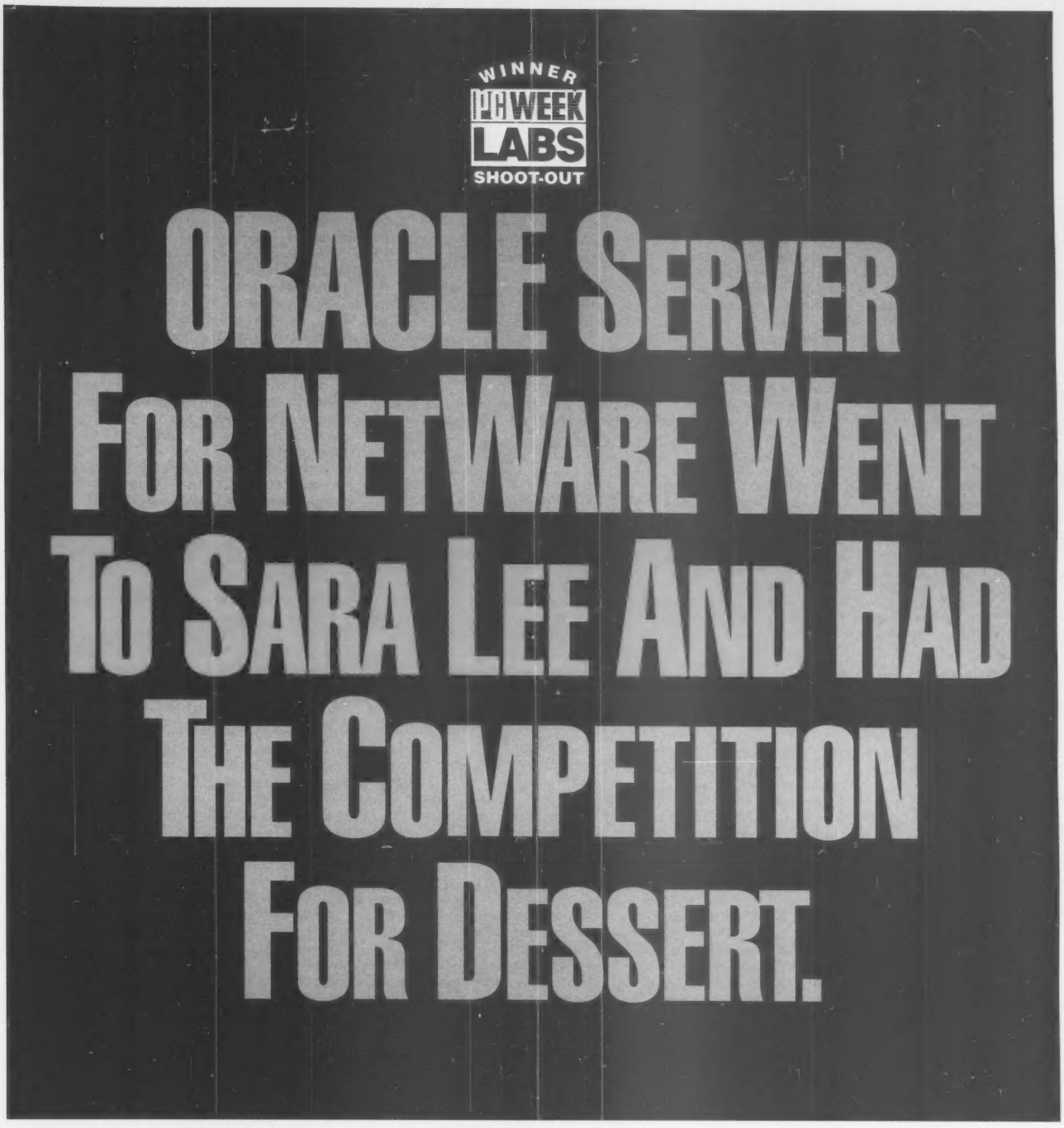

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Sara Lee Corp. and PC Week Labs.

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"ORACLE Server's performance shined on database queries that required complex aggregations—sometimes more than twice as fast as other products...

"In selecting ORACLE Server as the winner, the judges considered other factors such as product maturity and experience with corporate databases, and the selection of front-end tools to access the database.

"(And) even though the NLM version of ORACLE Server was new, it was considered to be a close extension of the firm's OS/2 and Unix products, which are proven technology on client/server platforms."

—PC Week June 24, 1991

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United shift to Unix heats up

Move to client/server scheme from IBM mainframe could save millions

BY ELLIS BOOKER
CW STAFF

CHICAGO — For the first time at United Airlines, a client/server architecture has cracked the glass house's grip on a mission-critical production application. As such, this beachhead is being eagerly watched by United's information systems group.

United will save between $3.5 million and $4.5 million immediately by moving a scheduling application from an IBM mainframe to a Unix-based client/server system.

"This is the first project motivated purely by the economics of downsizing," said Stephan G. Regulinski, director of corporate research and development at United.

The project, which went live Oct. 28, is moving a 2-year-old crew scheduling application, which had occupied about a third of one of United's 3090/600S IBM mainframes, over to four symmetrical multiprocessing Unix-based servers from Silicon Graphics, Inc.

In addition to the Silicon Graphics servers, Regulinski deployed a fiber-optic backbone and is replacing dumb 3270-style terminals with color X terminals linked to several IBM RISC System/6000 Unix servers.

Total cost of the project was about $1 million, $830,000 of which was spent on hardware and $92,000 on networking. This compares favorably with the $3 million to $4 million estimated cost to operate one-third of an IBM 3090.

The client/server architecture, which doubles available processing capacity and provides better performance, also results in a direct $1 million to $1.5 million savings because of more efficient crew scheduling.

Solutions to two of the largest scheduling problems — matching pilots and flight attendants to planes and routes — are already up and running. By December, all of United's domestic scheduling will be on the Unix platform, and sometime early next year, the international operations will be added.

United is already working on a second downsizing project, said Warner Schlais, director of United's planning and technology unit. The airline is looking to move the core database query programs from an IBM MVS mainframe to Unix. The Focus and SAS products are used by virtually all of United's business departments.

"Within the next six weeks we will know how much we can offload from the 3090," Schlais said, noting that he hopes to receive funding for the project by year's end. A phased migration to Unix will take six to 12 months.

As impressive as this downsizing example is, it is important to put it in context, said Omri Serlin, president of Itom International, Inc., a research and consulting firm in Los Altos, Calif.

"The fact that an application exists on a 3090 doesn't mean it is inherently meant to be on a 3090," Serlin said, noting that applications that do not require centralized databases can be relegated to personal computers, workstations and servers.

Serlin added that the measure of "more MIPS for the buck" is not always a reason to offload a mainframe application. There are costs to such migrations, he noted, and "if it takes enough applications off the mainframe, you end up with a machine that is not being utilized economically."

The impetus for offloading crew scheduling at United came early last year, when United's technical support unit realized that Regulinski had to either offload his application or buy more mainframe capacity.

A request for proposals went out to 13 Unix vendors. Benchmarking on the Unix systems was conducted in early 1990, but funding approval was not obtained until December 1990.

The group also explored the feasibility and advantages of parallel processing configurations.

Silicon Graphics pushed for the contract despite the apparent odds of selling into United's IBM-heavy shop.

Flying high

United's client/server approach:

- **Two Silicon Graphics four-processor servers and two Silicon Graphics six-processor servers.**
- **Seven IBM RISC System/6000s used as network servers and development servers.**
- **Fiber-optic backbone network, connecting a total of 52 color X terminals on two floors and an underground computer room.**
- **IBM 3172 controller for 3090 mainframe connectivity.**

Apple to offer guidance on client/server systems

BY JAMES DALY
CW STAFF

Apple Computer, Inc. Macintosh users engaged in the tricky job of building a client/server system will get a break in January, when Apple releases a boiled-down version of a key internal document that offers implementation blueprints for a variety of hardware and software configurations, sources briefed by the company said last week.

The document, called Vital, summates the collective experience of Apple integrators. Used for years within the company, it contains a series of architectural guides designed to assist users in integrating the Macintosh into client/server systems in a variety of environments.

An overview draft of Vital is expected in January, with a more detailed paper expected later in the year. Apple also plans to offer training courses related to the concepts in Vital later in 1992, sources said.

Users have long clamored to use Vital as an integral strategic planning tool. They said it would give them a better understanding of the hardware, software and associated support required in a client/server approach. The Chicago-based Management Apple Computers in Information Systems user group led the effort to pry the document loose from the tightfisted Apple.

"It's a quick way of letting us know what works and what doesn't," said Matt Rosen, assistant director for technical services at San Joaquin Delta College in Stockton, Calif.

"Vital is something that could make all of our jobs easier," added Ted Toler, a senior applications analyst at Union Carbide Corp. in Charleston, W. Va.

Apple ignored these pleas for years, however. "Like any large company, Apple is neurotic about what it releases and what it doesn't," said Dennis Hunter, a systems engineer at Eastman Kodak Co. in Rochester, N.Y.

Can you keep a secret?

One reason behind Apple's hesitancy is the fact that the document typically contains confidential information about Apple and third parties' products. Because of the confidential nature of some of the data contained in Vital, Apple has said it will tightly control distribution of the document, sources said.

Those wishing to examine the document must make a formal request for it and will be required to sign a nondisclosure agreement.

However, Apple's push to enter the corporate market, coupled with increased user pressure, is thought to have facilitated Apple's change of heart.

The release of Vital will also further Apple's drive to get its machines into the informational infrastructure of large firms.

Macintosh blueprint yields few juicy details

BY JAMES DALY
CW STAFF

PHOENIX — Armed with a "Blueprint for the Decade," Apple Computer, Inc. executives moved last week to address technology direction issues emanating from the company's recent, sweeping team-up with onetime rival IBM.

However, while Apple's outline was big on ideas, it was short on details and delivery dates.

Apple's blueprint is embodied in a forthcoming white paper that reveals the wide-ranging technological path the company intends to follow through the rest of the decade.

There are few surprises among the key goals outlined in "Blueprint for the Decade." However, Apple did say it plans to equip its entire Macintosh computer line with a reduced instruction set computing chip architecture by the middle of the decade. The firm also acknowledged that it is "experimenting" with pen-based systems.

The document also outlines points that Apple has already raised, including a series of updates for the System 7.0 operating system, the release of System 7.1 early next year, the joint venture with IBM and new directions in consumer electronics.

Despite the obviousness of some of the goals, users said they appreciate the checklist. "It's nice to know that Apple has a clear market direction and that they're just not bouncing from one industry crisis to another," said Barry Eisenberg, a computer specialist at Hughes Aircraft Co.'s Ground Systems Group in Fullerton, Calif.

Clever move

Analysts, too, said the outline is a good way to bolster customer confidence at a time when many questions still linger about how Apple and IBM will pull off their technological joint ventures.

"Apple wants to avoid having its customers feel uneasy because if they are uneasy, they might stop buying machines," said Pieter Hartsook, editor of "The Hartsook Letter," an industry newsletter in Alameda, Calif.

Among the areas covered by the document are the following:

- An ambitious update schedule planned for System 7.0. Additions will include improved data exchange with DOS and Microsoft Corp.'s Windows, integration of speech-recognition capabilities, multimedia enhancements and increased security.
- System 7.1. The newest release is likely to add extensions such as Adobe Systems, Inc.'s Type Manager, improved mathematical routines and the Quicktime multimedia application.
- Migration from Motorola, Inc. Apple plans to offer a migration path between Motorola's 68000 environment and the PowerPC platform. A "rock-solid" emulation environment will allow users to run their existing applications while taking advantage of the new hardware.
- Apple executives also touched on the firm's joint venture with IBM to develop an object-oriented operating that will be based on a 4-year-old Apple object-oriented system research and development project called Pink. The venture, called Taligent, is expected to produce a product by 1994.

However, analysts said Apple still has a lot of explaining to do in this area. "I don't think they adequately explained why users should wait three years for this when they can have [Next, Inc.'s] Nextstep today," said David Card, an analyst at International Data Corp. in Mountain View, Calif.

CORRECTIONS

An International Briefs item [CW, Nov. 11] incorrectly characterized Computer Associates International, Inc.'s plans for distributing its products in Europe.

The company has no plans to suspend its practice of selling directly to large customers.

The news item was drawn from a report in *Le Monde Informatique*, a *Computerworld* affiliate in France.

The original French report referred to some changes in CA's distribution of personal computer software in Europe. However, the PC reference was omitted from the *Computerworld* story, and the information was not checked with CA prior to publication.

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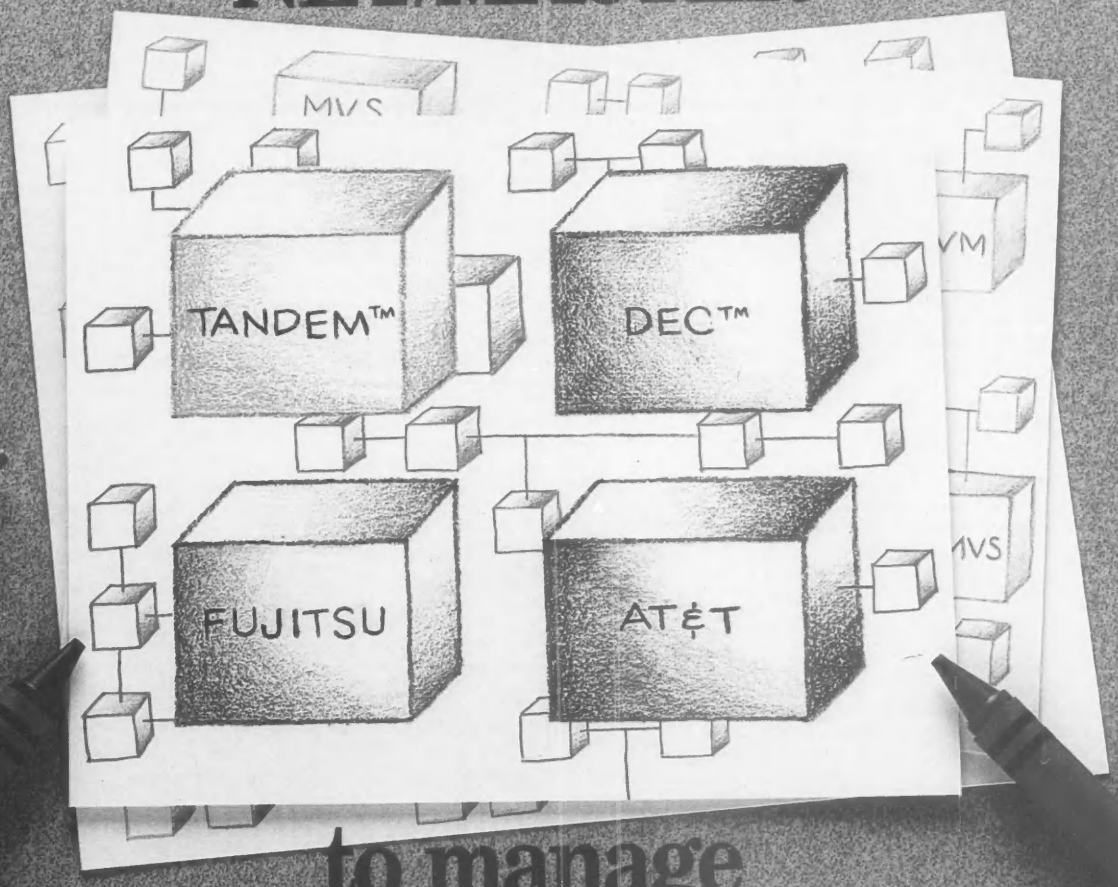

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NEWS SHORTS

Metaphor CEO takes IBM job

David Liddle, who had been a candidate to head up Taligent — the IBM and Apple Computer, Inc. joint venture — was named vice president of new systems business development at IBM last week. Liddle is former chief executive officer of Metaphor Computer Systems, a company IBM first teamed up with in 1988 and acquired last month. Liddle recently took himself out of the running for the Taligent job, although his new post will keep him involved in the start-up's activities, an IBM spokesman said. He also said the Taligent CEO slot is not yet filled, and a replacement for Liddle at Metaphor has not yet been named.

CompUSA sells Compaq to feds

The Government Division of CompUSA signed an agreement with Compaq Computer Corp. by which the computer retailer will sell Compaq computers to federal, state and local governments. Compaq will continue to sell products to federal agencies through its own General Services Administration schedule contract, but the agreement will beef up Compaq's government presence outside Washington, D.C. CompUSA's Government Division, formed a year ago, had sales of more than $30 million in its first 12 months — 35% from state and local governments and 65% from federal agencies.

Hacking strikers snarl French flights

On Nov. 8, striking electronics engineers sabotaged an air traffic control computer that serves controllers at Charles de Gaulle and Orly Airports on the outskirts of Paris. Commercial flights in and out of the French capital were severely disrupted during the start of the Armistice Day holiday weekend, leaving domestic and international passengers stranded for several hours. One domestic airline advised travelers booked for evening flights not to come to the airports. The French engineers went on strike without warning and demanded higher pay, a new bonus system and the hiring of 120 more engineers, according to reports.

Unix boxes roll from Intergraph

Intergraph Corp. last week rolled out two new Unix-based workstations for its Clipper C400 series and announced the availability of new software for mechanical design. The Interpro 6450 and 6480 are suited for compute-intensive mechanical applications such as computer-aided design and visualization. Slated to be available in March, the Interpro 6450 is priced at $24,900 and the 6480 model at $37,900. They offer nine times the floating-point performance of C300-based Intergraph workstations, according to company officials. The mechanical design software includes Intergraph/Engineering Modeling System Version 2.0 and a scanned drawing revision package. It will be available in March for $20,000.

IBM garners a silver goose

Calling it "one of our most significant wins this year," IBM recently bagged a one- to five-year contract to provide a panoply of systems design engineering, integration and maintenance services to the U.S. Air Force. The contract, which is valued at $38.3 million for its first year, brings together four separate technology projects with regard to the Command and Control Segment of the Sunnyvale, Calif.-based Air Force Satellite Control Network.

JWP takes lock, stock and barrel

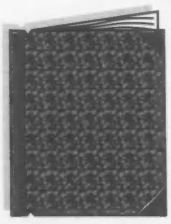
JWP, Inc. last week completed its acquisition of Businessland, Inc.'s outstanding capital stock, and shareholders voted in favor of the merger, making Businessland a wholly owned subsidiary of Purchase, N.Y.-based JWP. Businessland common stock will no longer be traded on any stock exchange. The company now becomes part of JWP's information systems business, known as JWP Businessland. JWP is a multinational technical services company with 24,000 employees worldwide and revenue of $3.2 billion.

More news shorts on page 116

Netware 1000 takes direction

BY JIM NASH
CW STAFF

Novell, Inc.'s Netware 1000 software is finding a role as a stand-in for an enterprisewide directory service that the Provo, Utah-based company said it will deliver later next year.



Netware 1000, a not yet officially available version of Novell's Netware 3.11 network operating system supporting up to 1,000 personal computers on a single server, has started to take shape. Limited to the most basic file-and-print functions, the software appears ideal to hold user information for large groups.

The product is shipping to selected customers for between $25,000 and $35,000 per server, according to Jim Bills, Novell executive vice president and general manager of the Netware Systems Group. He acknowledged the product's existence at Networld '91 last month. Bills said Netware 1000 will remain in controlled availability probably until April 1992.

Atlantic Richfield Co. (Arco) has purchased at least one copy and plans to buy as many as three more by year's end, said Mark Philpot, network administrator at the company's Los Angeles refinery. "We are using it to kind of create our own naming service," Philpot said.

Novell's naming, or directory, services are currently limited to covering domains of about eight servers at a time. The utility has come under fire as being inadequate, especially for large organizations that want to let users log on to the whole network. Prior to Netware 1000, users had the choice of waiting for Novell or migrating to Banyan Systems, Inc.'s highly praised Streettalk directory service.

Novell resellers, who requested anonymity, said Netware 1000 can serve nicely as a central point to which users can log on without limiting their network access. Some suggested that Netware 1000 could keep large firms wanting enterprisewide directory services pacified until those services can be shipped with Netware 3.2, scheduled for the end of 1992.

Too small for some

However, Netware 1000 would not address the directory concerns of all large firms. Even support for 1,000 users is too paltry for some firms, said Sholom Bryski, senior vice president at Bankers Trust Co. in New York. "We have 7,000 PCs," he said. Bankers Trust would still have to coordinate directory services for many machines.

It even presents new problems, one of which is overcentralization. "I don't want [network] traffic from London going to New York just to access the server," Bryski said.

At the moment, Netware 1000 is working just fine for Arco's Los Angeles refinery, which has a 300-workstation network. Contrary to earlier reports that the software's sheer size made it a bit unstable, Philpot said the only problems he has experienced have been with some third-party software that accesses Netware's bindery, which lists all user access profiles.

These packages were written to run on machines serving the traditional maximum of 256 users; as a result, glitches have caused some PCs to lock up when more than 256 users log on to the server. Philpot characterized the problem as "minor."

All employees log on to a Netware 1000-equipped IBM Personal System/2 Model 95 server for file sharing and printing. Six departmental servers hold the majority of files for each of the plant's 250 users. These servers are attached to the other two servers. "At this point, Netware 1000 is meeting every need we have," Philpot said.

Bob Guaraldi, president of Valinor, Inc., a Manchester, N.H., Novell reseller, said the typical company needing Netware 1000 would have a large campus with a well-developed data transmission system of intelligent hubs and other devices. It would also want to consolidate its network onto a minimum number of machines.

AT&T answers call for frame-relay service

BY JOANIE M. WEXLER
CW STAFF

NEW YORK — Long mum about its intentions to deploy frame-relay service, AT&T will today announce mid-1992 service availability and erase the largest question mark surrounding the ubiquity of frame relay in the public arena.

AT&T's entry will supply the industry with healthy competition and spur user awareness about the neophyte technology, which is expected to grow to a $1 billion market by 1995, analysts briefed on the announcement said.

Frame relay is a fast form of packet switching aimed at such critical applications as local-area network interconnection.

AT&T's service will initially span about 100 cities nationwide, with international extensions expected to follow.

Berge Ayvazian, a vice president in the telecommunications consulting group at The Yankee Group, a Boston-based consulting firm, said AT&T will support a range of access speeds and will integrate public and private services. "These things have not been emphasized in other frame-relay services announced to date," he said.

Frame-relay announcements have already been made by direct competitors U.S. Sprint Communications Co. and MCI Communications Corp. Network service providers Wiltel, Compuserve, Inc. and BT North America, Inc. are providing service to a sparse number of users.

Analysts said AT&T will bundle its frame-relay offering into a whole new data services package — separate from its Accunet product line — that includes other services appropriate for applications that do not fit the characteristics of frame relay. The new services will be administered by a subgroup of AT&T's Business Communications Services unit called the AT&T Data Communications Services Business Unit, officially formed today, an AT&T spokesman said.

The initial offering is expected to run at traditional 56K bit/sec. to T1 (1.54M bit/sec.) speeds, although T3 (45M bit/sec.) service is under development and could emerge by year's end, analysts said.

Relay race

AT&T

AT&T joins frame-relay service fray

- **Availability:** Second-quarter '92 in about 100 cities nationwide.
- **Speed:** To T1 initially, possibly higher by year's end.
- **Packaging:** Bundled with other data services to address a mix of applications under new AT&T network service category.
- **Pricing:** Flat rate, with some customization flexibility.

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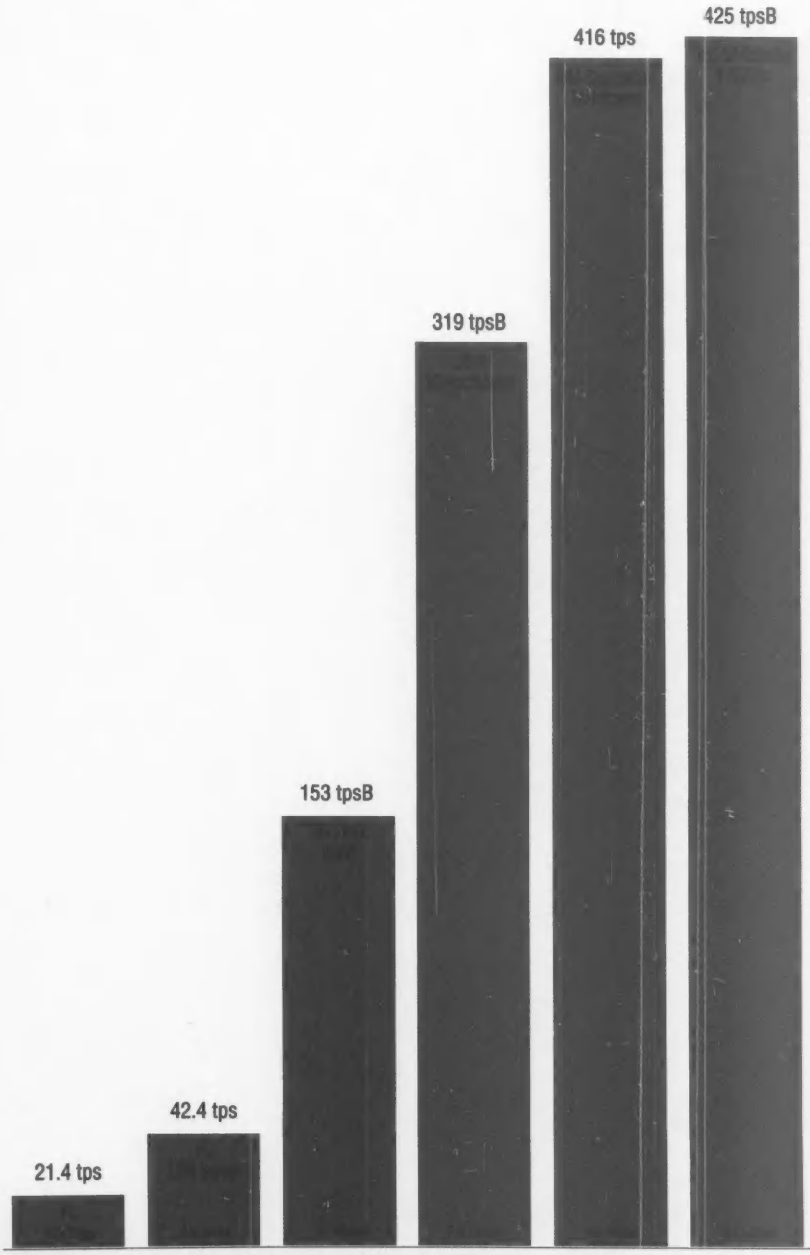

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Users hungry for interoperability

BY MARYFRAN JOHNSON
CW STAFF

RESTON, Va. — "Hell . . . is a place where nothing connects with nothing."

With that T. S. Eliot quote looming large on the screen behind him, the U.S. Department of Defense's (DOD) top information systems official underscored the hunger for interoperability in today's corporate computing environment.

An equal helping of honesty about the confusion surrounding open systems is also needed, said Paul Strassmann, director of defense information for the DOD, in his keynote speech last week to X/Open's World Congress on Open Systems.

"It is very important in the world of open systems that we don't pretend to know all the answers," Strassmann said. "Being explicit about the risks involved will increase your credibility with your senior managers."

The three-day X/Open World Congress attracted corporate users from a wide range of companies, including American Express Co., General Motors Corp., Barclays Bank PLC, the Canadian National Railway, McDonnell Douglas Corp., the UK's Department of Trade and Industry and The Boeing Co.

"Open systems is not a particular standard or technology," said Catherine Howells, manager of external standards at Boeing Computer Services in Seattle. "It's the ability to use technology appropriately to get our jobs done."

Reuse of software code and components will be a "principal contributor" to the value of open systems, Strassmann said. "This is a set of benefits you can explain to top management."

Strassmann also urged IS executives to develop long-range open systems strategies for their companies, emphasizing economic value rather than technical capabilities. "The primary inhibitors to open systems will be managerial, after the technical problems are solved," he said.

The financial lure of reducing software maintenance costs and conversion and migration expenses is the most powerful one open systems can offer to chief financial officers and senior managers outside the IS department, he added.

The DOD projects that its software costs will rise from a current $15 billion a year to more than $45 billion during the next few years. With more than 1 million computers installed and 1.4 billion lines of application code in place, the defense agency is now building its own central repository of reusable software code.

While most of the users at the X/Open meeting represented companies already investing in Unix applications and open systems, some came just to test the wind.

"We need to look beyond today and to the future," said Wayne A. Brower, vice president of corporate business systems at Herman Miller, Inc., an office furniture manufacturer in Zeeland, Mich. The company is anchored by an IBM Enterprise System/9000 Model 400 mainframe and minicomputers from Digital Equipment Corp., with a few Unix-based workstations from Hewlett-Packard Co.'s Apollo Division for computer-aided design work.

At Barclays Bank in England, the corporate strategy is heading toward open systems, and its branch network is now stocked with Unix-based IBM RISC System/6000s. Yet security concerns are still tantamount, said Paul J. Faulkner, a senior security consultant at the bank.

Worries about security and network management were also reflected in a user survey released at the conference (see story below).

Open sesame

Here are some highlights from the X/Open Xtra '91 survey of 237 open systems users at companies throughout North America, Europe, Japan and Australia:

- Most open systems products available today are considered inadequate for corporate needs, yet more than 90% of those surveyed plan to use Unix more in the future.
- The top business requirement is interoperability across heterogeneous networks, with client/server applications and network security also key priorities.
- Less than one-third of those surveyed said senior corporate management mandates open systems or even understands the benefits.
- "Openness" is broadly interpreted as vendor-independent specifications, but confusion exists on individual technologies such as Microsoft Corp.'s Windows 3.0 or the Open Software Foundation's OSF/1 operating system.
- The biggest obstacles to open systems are seen as proprietary vendors resisting the shift and "open" vendors adding proprietary functions that lock in users.
- Demand is building for object-oriented databases, with only 13% using them today but 65% planning to rely on them in the future.

Source: DMR Group, Inc.

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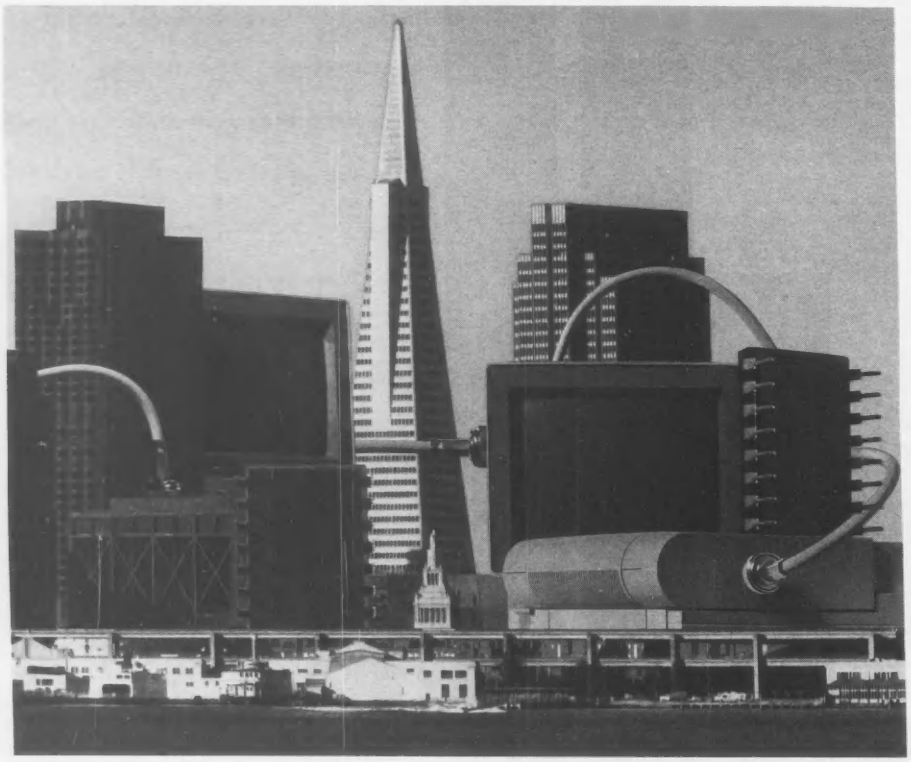

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Ingres enhances database, 4GL gear

BY JEAN S. BOZMAN
CW STAFF

BURLINGAME, Calif. — The Ingres Product Division of Ask Computer Systems, Inc. last week unveiled its next-generation relational database engine, which will support more than a dozen platforms not long after release.

Ingres also extended its fourth-generation language (4GL) tool set to run under Microsoft Corp.'s Windows 3.0.

The new Ingres 6.4 relational database engine will support a database-event alerting system that could replace time-consuming polling of workstations in a network. It also has a new Interactive Performance Monitor to give database administrators better feedback on how their applications are affecting computer system resources.

At the same time, Ingres extended its Ingres/Star distributed database server to Unix platforms.

Timing is key

Industry analysts said the near-simultaneous release of the database engine on more than a dozen hardware platforms was even more important than Ingres 6.4's new features. Within 90 days of the first shipments in December, Ingres 6.4 will run on Digital Equipment Corp.'s VAX/VMS machines, Hewlett-Packard Co.'s HP-UX computers, Amdahl Corp.'s mainframes, IBM's RISC System/6000s, other Unix workstations and IBM-compatible personal computers.

"They're able to get a quick rollout by having some of the hardware vendors do the porting for them," said Donald Feinberg, a program director at Gartner Group, Inc.'s Software Management Strategies Service in Santa Clara, Calif.

"This simultaneous release is really a big deal," said Dennis McGinn, president of Ingres. "This is the first time a major [relational database management system] vendor has made the DOS, OS/2, Unix and VMS versions of the product available within 90 days of the ship date."

McGinn said the intent was to cover 90% of the available RDBMS market by focusing on the most popular software and hardware platforms.

Previous Ingres 6.0 releases ran on more than 40 platforms, Ingres executives said, which prevented quick shipments of new products to Ingres users.

Users also seemed pleased with the first major release of products since Ingres was acquired by Ask in October 1990. "The event-alerters, for example, will cut out a lot of code, improve performance and make things simpler than before," said Eric Palmer, president of the North American Ingres Users Association.

Ingres did not have to produce the kind of distributed database features its competitors are introducing now, since those features were already in the Ingres networking products, according to Feinberg.

Price range

Prices for the Ingres 6.4 RDBMS range from $4,000 to $460,000, depending on the type and size of computer used. The Ingres/Star distributed database product ranges from $1,200 to $138,000.

Ingres/Windows 4GL, a graphical user interface-based package introduced in April 1990 for Unix computers and DEC VMS machines, has been ported to PCs. The icon-based Ingres/Windows 4GL tool set had run under the Open Software Foundation's Motif user interface and under the Decwindows user interface; now it will run on IBM-compatible PCs under Windows 3.0. It is slated to be available in December for $995 per PC.

Ingres/Visionpro, a character-based development environment that had run only on terminals to VAX machines, is now available for Unix workstations and PC-DOS machines. A character-based Ingres Tools for DOS package, which includes Ingres/Visionpro, will cost $990.

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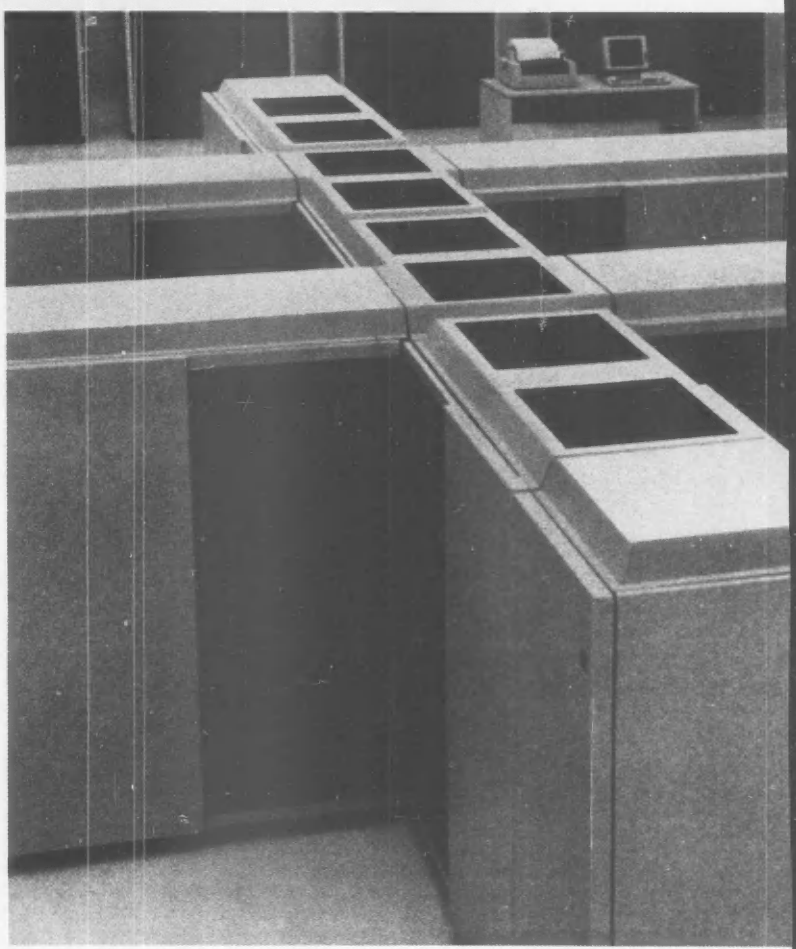

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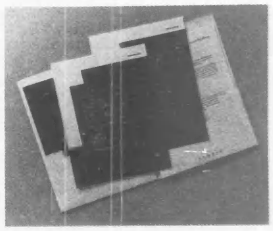

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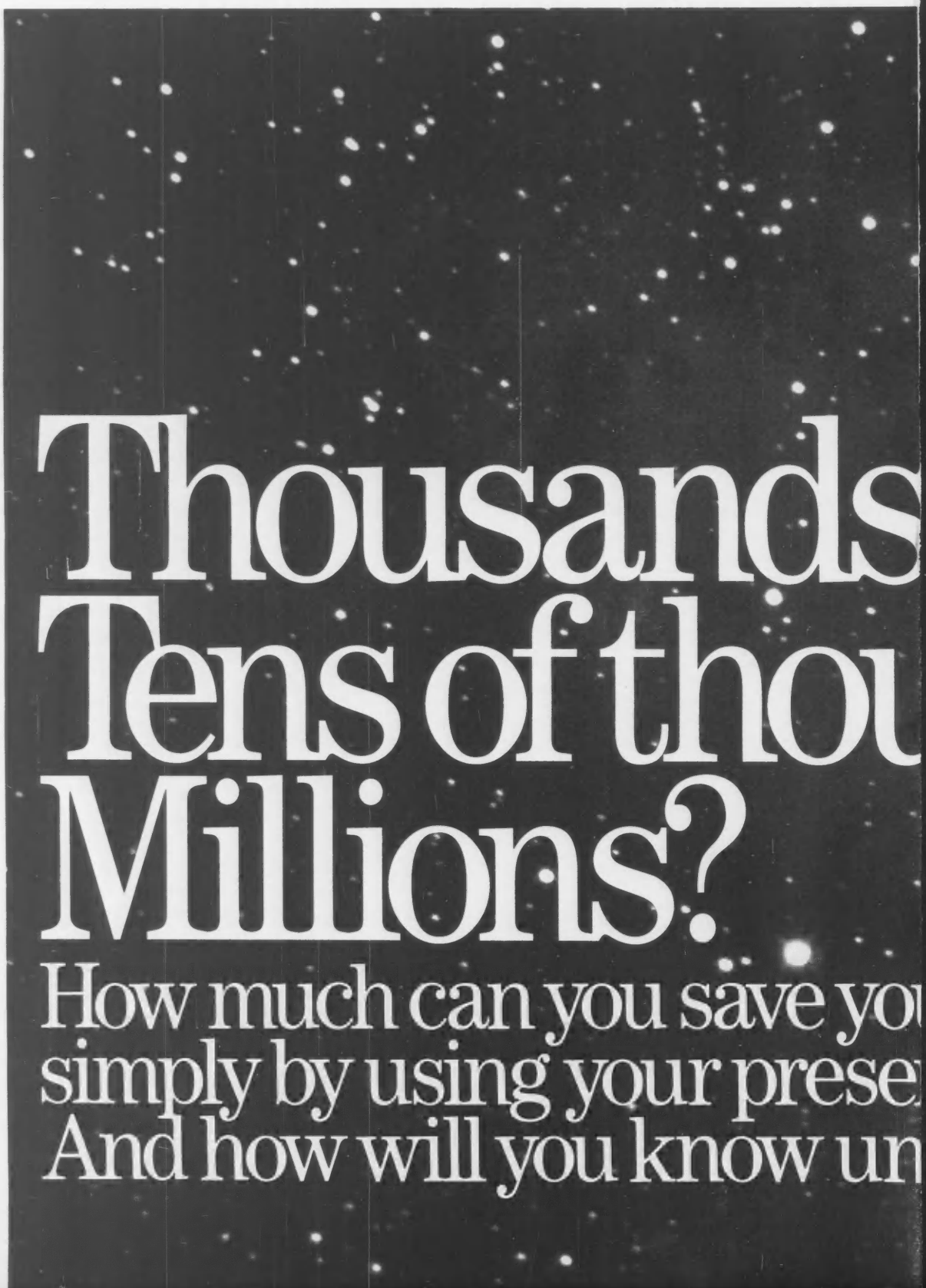
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Bull launches 'vendor-neutral' service

BY KIM S. NASH
CW STAFF

BILLERICA, Mass. — Like other big-iron firms scrambling to supplement flagging hardware sales, Bull HN Information Systems, Inc. is establishing a "vendor-neutral" systems integration unit this week.

Analysts said they doubted that Bull's Integris subsidiary, which opens today, will become a major integrator, citing its questionable neutrality, financial constraints and focus on technology rather than business consulting. "People don't want technology. They want their business problems solved, and Bull may not be able to do that," said Bonnie Digrius, program director at Gartner Group, Inc. in San Jose, Calif.

Steve Gardner, president of Integris, which is based here, claimed Integris will not favor its parent company's products over those from other vendors.

Integris' initial integration deal suggests that the company is not averse to using Bull's product. In a "three-year, multimillion-dollar" contract recently signed with a large telecommunications company, Integris is tying together several large Bull systems, Gardner said. He declined to name the client.

Gardner: *Integris will not favor Bull's products over those of other vendors*

"I have no doubt [Integris] has a Bull bias," Digrius said.

Integris is now bidding on 10 contracts, with 70 more prospects "in the hunt," Gardner said. First-year sales will top $20 million, doubling to $40 million within two years, he predicted.

Customer targets include Bull's 50 to 100 largest North American sites as well as two regional areas in the Northeast and Southwest.

Integris will specialize in five technical areas: migrating CICS/VSAM mainframe applications to reduced instruction set computing workstations; imaging; connecting local-area networks; LAN security; and designing personal computer- and workstation-based sections of client/server applications.

Gardner claimed Integris is the first integrator formally committed to the Open Software Foundation's Distributed Computing Environment and Distributed Management Environment standards.

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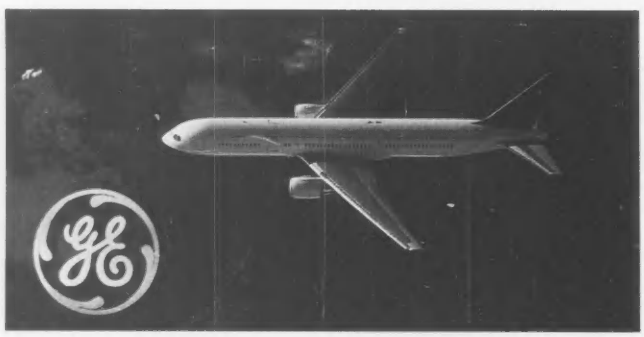

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MCC's EINet to go on-line

BY ELLIS BOOKER
CW STAFF

CHICAGO — A U.S. information technology research consortium last week disclosed plans to build a national electronic network aimed at exploring new, faster ways for the industry to conduct business and develop products.

Scheduled to go on-line next March, the network — dubbed EINet for enterprise integration network — is being launched by Microelectronics and Computer Technology Corp. (MCC), a technology consortium representing leading U.S. and Canadian users and developers.

Initially, EINet will connect a portion of MCC's 22 shareholders and 49 associate members.

MCC said it is currently negotiating with an unnamed carrier to be the primary provider of the internet. The group said it hopes to have a central Network Operations Center up and running by July.

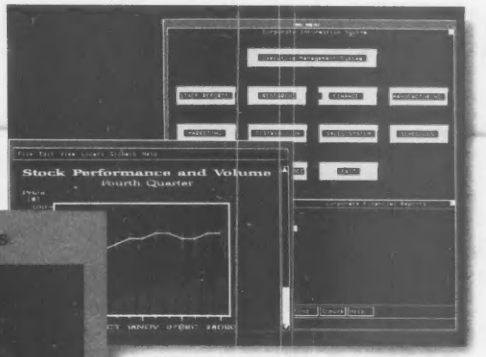
Although many companies have already set up electronic data interchange and electronic-mail links with their trading partners, customers and industry peers, these "point-to-point" arrangements are still far too complicated and take too long to build, MCC Executive Vice President and Chief Operating Officer Alan Salisbury noted.

Acknowledging that many government agencies and commercial users have deployed integrated networks already, Alexander Cavalli, chief architect for MCC's recently formed Enterprise Integration Division, said that as long as these projects pursue their own enterprise integration agendas, "integration across company boundaries will be prohibited."

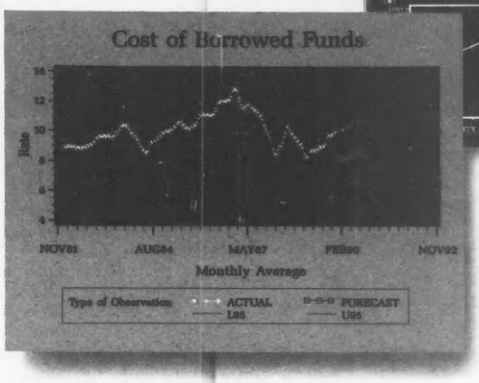
Initial services on the EINet will be familiar fare: electronic bulletin boards, special interest group forums and E-mail services. Future advanced services will be added as they are requested.

The EINet will cost about $750,000 to launch, MCC officials said, adding that the network should become a self-sustaining operation in three or four years. Tiered participation fees for EINet are as follows: Firms with annual revenue of more than $500 million will pay $60,000 a year; firms with revenue between $50 million and $500 million will pay $30,000 a year; and firms with less than $50 million in annual revenue will pay $10,000 a year.

Executive



Finance



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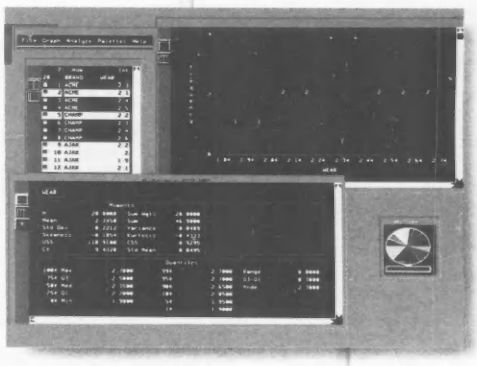
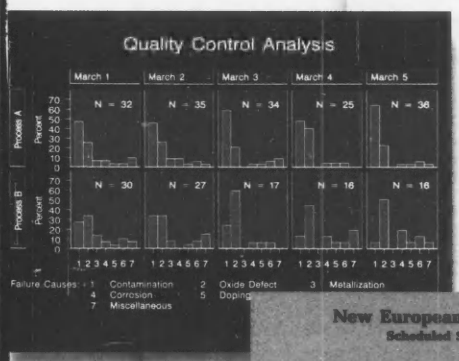


Manufacturing



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Alliant, Cray, Intel prep super systems

BY J. A. SAVAGE
CW STAFF

ALBUQUERQUE, N.M. — Autumn may denote a winding down of the life cycle, but for the supercomputing community, this fall is turning out to be a real firestorm of barn-burner product introductions.

Cray Research, Inc. and Intel Corp. each claim that the supercomputers they will roll out here today and tomorrow at Supercomputing '91 will best Thinking Machines Corp.'s market-leading performance of 1 trillion floating-point operations per second (FLOPS).

In addition, Alliant Computer Systems Corp. is aiming at price/performance, offering a potentially more powerful computer for about half the cost of the new Cray and Intel computers.

The three systems are not expected to be generally available until early next year, analysts said.

The season began with two major supercomputer announcements: last week's unveiling of a downsized, massively parallel computer server from start-up Wavetracer, Inc. [CW, Nov. 11] and Thinking Machines' 16,000-processor, 1 trillion FLOPS CM-5 computer [CW, Nov. 4].

Massively parallel machines, comprising hundreds and sometimes tens of thousands of processors working together, will have a high profile at this week's conference. Cray's computer will represent supercomputing's old guard, although the company has promised a massively parallel computer by 1993.

Cray's Y-MP C90 has a peak performance of 16 GFLOPS, which Charles Grassl, marketing analyst at the company, claims is faster than Thinking Machines on "industry-standard applications and nonlocalized data distribution."

The C90 will cost between $30 million and $35 million, according to John Jones, an analyst at Montgomery Securities in San Francisco.

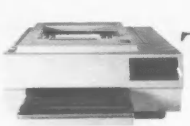
Intel's machine will have up to 128 Intel I860 XP processors, each rated at 100 MFLOPS. Analyst Gary Smaby, president of the Smaby Group in Minneapolis, estimated it will cost about $25,000 to $30,000 per CPU.

Alliant's new offering, the Campus 800, comprises between 25 and 800 Intel I860 XR processors in clusters of 25. A 100-processor cluster is priced at $2.5 million, and an 800-processor configuration costs $16 million. The full-blown computer has a peak rating of 32 GFLOPS.

Craig Mundie, Alliant's chief executive officer, said that although Alliant's rating is higher than Cray's, it is primarily targeted at distributed computing, unlike Cray's centralized system.

"People who have not yet written code to run on a [massively parallel] supercomputer would have a financial incentive to buy Alliant," Mundie said.

He added that the computer does not have to reside in one room, as the clusters can be connected through fiber optics across a string of buildings.



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Cray goes on with Floating Point buy

BY J. A. SAVAGE
CW STAFF

After issuing a terse announcement that it would not buy Floating Point Systems, Inc., Cray Research, Inc. late last week reversed itself and said the acquisition was back on.

A Cray spokeswoman would say only that the company changed its mind about the $3.25 million deal, after initially deciding that Floating Point's technology would not be a strategic fit. Floating Point filed for Chapter 11 bankruptcy protection a few months ago, just before Cray disclosed interest in the company.

Cray, based in Mendota Heights, Minn., is believed to covet Floating Point's Sun Microsystems, Inc. Scalable Processor Architecture-based supercomputer that is under development. Cray, moreover, would like to convert Floating Point's array processor users into supercomputer customers.

Floating Point has pared back its staff to approximately 25, according to Eric Anderson, the Beaverton, Ore., company's director of sales. The Cray spokesman said it had not been decided whether Floating Point staff would be rehired once the acquisition is completed.

Floating Point started life as an array processor maker. Until the late 1980s, its products acted as a back end for Digital Equipment Corp.'s VAXs.

However, Floating Point was late getting into the stand-alone and open systems business. It scrapped its expensive "T series" parallel supercomputer development in 1988. In 1989, it acquired the remains of Celerity Computing, Inc., which had a Unix-based supercomputer, to gain a better understanding of open systems.

Since 1987, Floating Point has posted cumulative losses of at least $82.3 million.

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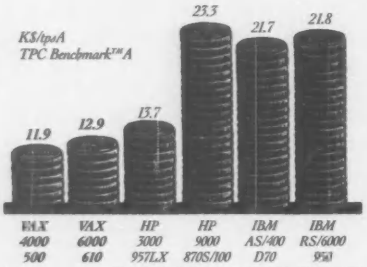

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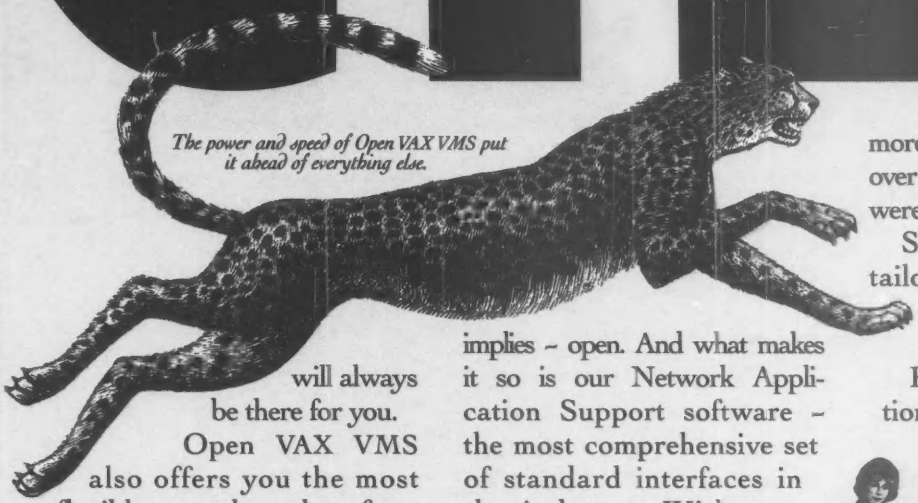

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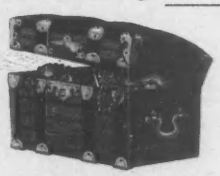

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ADVANCED TECHNOLOGY

TECH TALK

Operating in a vacuum

■ The U.S. Defense Advanced Research Projects Agency has awarded the Center for Microelectronics in North Carolina an 18-month, $1.1 million grant to research vacuum transistors. The transistors are arrayed in vacuum chambers that are only microns — a millionth of a meter — deep and are 10 trillion times smaller than the traditional vacuum tubes that powered radios and televisions 20 years ago. The tips of the cathodes, where the electrons are emitted, are only a few atoms in size. Unlike existing solid-state transistors, the vacuum transistors turn on instantly, are insensitive to radiation — which disables solid-state devices — and are able to operate in temperature extremes from near absolute zero to more than 2,000 degrees Fahrenheit.

Fuzzy fail-safe system

■ Two scientists at Los Alamos National Laboratory in Los Alamos, N.M., have developed a computer program that uses fuzzy logic to assess the risk of theft or misuse of nuclear materials. The program works with parameters that are fuzzy — not completely specified — and was designed to pinpoint the best ways to safeguard plutonium and enriched uranium against theft or unauthorized use from nuclear facilities. A typical facility safeguard system combines accounting methods, controls such as tamperproof seals and doorway monitors and physical security such as armed guards and fences. The challenge was to design a system that combines the three elements, said Jack Markin, who developed the program with Arnie Hakkila. There are certain systems elements as well as budgetary and operational constraints, and the object is to apply them appropriately, Markin said. The fuzzy resources optimization program enables users to determine how to allocate resources to optimize the system's probability of detecting irregularities, he said.

Quest for machines that think

BY CHRISTOPHER LINDQUIST
CW STAFF

Was it live or was it a microchip? That was the question asked of judges at the first Loebner Prize Competition at The Computer Museum in Boston recently.

The $100,000 Loebner Prize Competition is the brainchild of Hugh Loebner, president of Crown Industries, Inc. in New York. The competition's goal is to find a program capable of passing the Turing Test (see story below). Loebner established the prize to spur experimentation in computer intelligence. "People had been discussing the Turing Test; people had been discussing AI, but nobody was doing anything about it," Loebner said. "So let's do it."

British mathematician Alan M. Turing was one of the pioneers of computing, having proposed a Universal Turing Machine in 1937. A Turing Machine would have consisted of a paper tape divided into squares. Each square would contain either a one or a zero. The tape was to have been threaded through a machine that could read from, write to and move the tape. Complex computations could then have been performed, much as modern digital computers function today.

Loebner *seeks to inspire experiments in computer intelligence*

In 1950, Turing prepared his Turing Test to determine the point at which such a machine could "think." Turing died in 1954, but his ideas and his test have remained topics of debate ever since. One topic for discussion is whether a machine that passes his test is truly thinking.

If a program ever does manage to pass the test, the questions may become more ethical than technical: Is it morally wrong to turn off a "thinking" machine?

According to Daniel Dennet, a member of the prize committee and a professor at Tufts University, the answer is yes. "The program that would be able to win the contest would be able to converse with you on why it has civil rights," he said. "I think a person who just had that conversation with a computer would have a hard time unplugging it," he added.

Photos by Seth Resnick

Judges *take part in the Turing Test of machine intelligence, aimed at proving whether a machine could ever think like the human mind*

It may be some time before the question becomes necessary, however. This first Loebner test was far from a true Turing Test, and the $1,500 award was equally distant from the grand prize.

The smaller award was offered because the committee determined that no programs are currently available that could replicate human interaction for even a few minutes without some restrictions. The full $100,000 award will only be offered when a machine can pass the test with no restrictions.

Those restrictions included limiting the topics of conversation that could be discussed by the computer and the human control subjects (two examples were women's clothing and dry martinis), and requiring judges and human "confederates" to hold normal conversations instead of trying to deceive.

Conversing with computers

Ten judges sat in front of terminals, each of which was connected to either a computer or a human confederate. The judges were allowed 14 minutes to "converse" via keyboard with the entity on the other end. At the end of the conversation, they rated whether the entity was human or machine. The machine that fooled the most judges was the winner.

Some contestants were quite quickly discerned to be computers. Techniques such as taking the judges' comments and returning them as a question were obvious. The similarity of several conversations to those held with Eliza, an early "conversational" program, showed that some of the basic concepts behind computer conversation have not changed much over the years — Eliza was written in 1966.

Joseph Weintraub, president of Thinking Software, Inc. in Woodside, N.Y., used a modified version of his commercial PC Therapist software, designed to have "whimsical" conversations, to win the prize. He said the fact that the judges were not chosen for computer literacy made them easier to fool and indicated that computer-knowledgeable judges would make for a more stringent test.

Weintraub said programs will eventually move beyond mimicking human conversation and into the realm of thought, but humans should always keep the upper hand. "I think it's very important that we always stay close to the electric supply."

The imitation game

Mathematician Alan M. Turing summed up his idea of what would constitute a "thinking machine" in 1950, when he claimed that within as few as 50 years, a computer would be possible that could "play the imitation game so well that an average interrogator will not have more than a 70% chance of making the right identification (whether machine or human) after five minutes of questioning."

While the Loebner Prize committee's first test was not a true Turing Test, it did demonstrate that people could be fooled by computers.

Whether a true Turing Test will determine if a machine is actually "thinking" or simply behaving as a complex parrot is another question. However, it is an issue that Turing discarded: "The original question, 'Can machines think?' I believe to be too meaningless to deserve discussion," he said.

CHRISTOPHER LINDQUIST

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EDITORIAL

Changing values

A recent *Business Week* cover story noted that the key to business success in the '90s is offering high value for the dollar. That's true in the PC hardware business, as Compaq's fall from grace has shown. Now it's software's turn.

The PC software upgrade wars have reached a fever pitch. The industry's elite — Borland, Microsoft and Lotus — are duking it out in the mud to steal each other's customers with cut-rate promotions. If you use a leading spreadsheet now, you can basically upgrade to anyone else's spreadsheet for less than 30% of the list price. And if you pay full price for some other products, you can now get a lot of free software thrown in.

What fun. For users, the competition creates a windfall of good deals at just the time when many are reconsidering their corporate standards in light of the need to upgrade massive numbers of users to Windows. It also gives users much more leverage to cut deals on service and support for volume upgrades.

For vendors, though, discounting creates a big potential problem. By offering the same products for less than a third of their original price, vendors risk raising questions about the real value of the software they make. Maybe it's time those questions were asked. No magic formula made $495 the standard for a spreadsheet or a word processor. That's what customers would pay when Lotus and Wordperfect hit the market, and everyone has simply followed along. It isn't necessarily what users will pay today.

When the discount war subsides, vendors will push to re-establish premium pricing. They'll argue that high prices are needed to assure continued investment in product quality.

It ain't necessarily so.

The PC software industry already enjoys some of the highest profit margins and profit-per-employee ratios in business. Despite the high up-front costs to develop software, the fact is that a successful product generates enormous margins after the investment is recovered. That's how Lotus justified a $26 million compensation package for its chairman in 1987 and Microsoft manages to maintain a market value equal to DEC's.

If discounting creates dislocation, it's up to vendors to adapt. Borland, for example, is always the first company to use price as a competitive lever. Yet today it enjoys some of the best revenue-per-employee ratios in the industry. Thinner margins create pressure to do more with less and to target market niches carefully. It's bitter medicine, but nothing the country's biggest industries haven't already swallowed in the name of remaining competitive.

Pricing pressure in single-user software may also divert vendors' attention away from adding a few more bells and whistles to shrink-wrapped packages and toward the high-value, high-ticket areas of network and multiuser computing. If so, that will be the best news yet. Development is sorely needed in those areas.

LETTERS TO THE EDITOR

Photo faux pas

I am writing to compliment you on "The ethics gap" in your Executive Report [CW, Oct. 14]. As a government contractor, we are already attuned to ethics issues and have ongoing training and company policies with tough enforcement provisions. This is an important topic.

On a less complimentary note, I found your use of the "semicheesecake" photo of Alana Shoars in poor taste. Just because she is a young, attractive woman is no reason to run this kind of picture. It's hard for me to imagine you using a similar pose of DuWayne Peterson or Ron Ponder.

James E. Godfrey
Director, Communications and Information Management
Magnavox Electronic Systems Co.
Fort Wayne, Ind.

Delay tactics

While reading your article "IBM insists OS/2 2.0 worth the wait" [CW, Oct. 28] regarding IBM's "refusal last week to dwell on its decision to delay . . . OS/2," it struck me why it keeps pushing back the release date.

The author quotes IBM executives who swear OS/2 will be "the center of it all." This is IBM's way to generate pent-up demand, hopefully making consumers rush out and plunk down $195 for OS/2.

As the economy continues to crawl around in the recession, IBM knows we're perfectly willing to put up with Windows and our DOS programs. By postponing the release to first-quarter 1992, IBM can avoid soft sales caused by a sluggish economy. Maybe it knows we're not about to spend $200 on a luxury like OS/2, more RAM, more hard disk, *ad infinitum* . . .

Instead, IBM holds off, hedging its bets that by next March, the economy's pulse will thump with a healthier heartbeat. And, if it doesn't? Well, October always looks good.

Gregory R. Hopp
Micro support specialist
Columbus, Ohio

Not final answer

Regarding "Offshore software crews save labor costs" [CW, Oct. 28], we have been using offshore labor from the Philippines for the past five years. However, the article implies that doing the work offshore is a final solution.

This is true in the case of software conversions. In the case of offshore development, it is possible if detailed specs are provided. Unfortunately, very few shops take or have the time to produce detailed specs. Therefore, the software developed offshore is a reasonable prototype of the finished product.

There is no substitute for direct day-to-day contact with the people who are going to use the system. Even so, developing the system offshore to a prototype stage can represent a substantial savings.

Just be aware of the limitations of developing sytems away from your home site, even if it is done outside your state.

In my experience, the Philippines offers a wealth of inexpensive talent that is fully capable of doing complex projects. It is a highly literate country with laws patterned after the U.S., and the people have the Asian work ethic. The government is highly supportive of software exporting because having the work done there brings in investment funds without depleting the resources (i.e., contributing to a "brain drain").

Keep providing us with interesting articles showing various alternatives. Thank you.

James Rotter
President
DBMS Software Services
Dickinson, Texas

Premature guilt

As a software vendor, I applaud the Software Publishers Association's (SPA) efforts to combat piracy. But I am absolutely appalled that you would cite in your Inside Lines section several companies as being "under investigation" [CW, Nov. 4].

It is bad enough when law enforcement agencies leak the names of criminal suspects. For a private organization to do so (with your help) is unconscionable. I believe that piracy is widespread; the SPA will be able to establish the guilt of many.

We do not need to impugn the reputations of anyone until their guilt has been established.

Premature disclosures only lessen the impact of publicizing the names of certified offenders.

Richard S. Hong
Hawk Scientific Systems, Inc.
Kinnelon, N.J.

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You can't manufacture market demand

ANDREW BOUGHTON

With the dual effects of recession and mature markets, it is hardly news that we have reached a critical phase in the information technology business. The worst thing we can do at a time like this is to allow the urgent need for new markets to overcome common sense.

While most suppliers are responding with strategies of real value to their customers, the search for new markets has also led some firms to develop products that are not useful to customers.

The value of information and information technology to a commercial organization is not esoteric. Information and knowledge do not necessarily translate into competitive power, nor does information technology. Effective action in business depends on people, working within a sensible organizational framework and using the most appropriate information and technology.

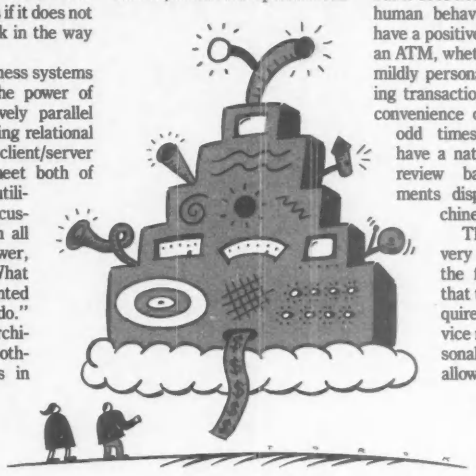
With this in mind, we can use two simple questions to define useful technology. The first is very straightforward. For business applications, the key question is simply, "Is it critical to the business mission and the operations which support that mission?"

The second and more subtle question is, "Does it work in the way that people work?" This does not just mean user-friendly. The best written software in the world can be useless if it does not allow people to work in the way that they prefer.

Large-scale business systems processors using the power of parallel and massively parallel architectures, running relational databases in a client/server mode, genuinely meet both of the conditions for utility. If we ask what customers can do with all that additional power, the answer is, "What they've always wanted their systems to do." Moreover, these architectures will serve other useful purposes in the near future, such as meeting the enormous demands for processing and transmission power associated with image and multimedia applications.

By contrast, the interactive video equipment released in recent years represents a failure of vendors to effectively assess utility.

Interactive video machines were seen as a logical extension of self-service banking machines, mainly the very successful ATMs. These machines, however, would dispense information, rather than process routine transactions. From the outset, the equipment became a product in search of a market. Banks said they would not buy interactive video. They explained why in very precise terms, and despite the efforts of computer vendors to make them change their minds, they kept their word.



James Toraki

The reasons were twofold. First, the equipment may be logical from a product standpoint, but it does not follow the logic of human behavior. While people have a positive inclination to use an ATM, whether because of the mildly personal nature of banking transactions or the genuine convenience of getting cash at odd times, few customers have a natural inclination to review banking advertisements dispensed by a machine.

The second reason is very closely related to the first. Banks know that their customers require answers to service needs through personal interaction, which allows both parties flexibility and the simple satisfaction of personal contact. They want to encourage customers to talk to their staff members, not waylay them with computer equipment.

What happened to interactive video for banking typifies one of the dangers inherent in decentralized planning processes. Even with a sound global strategy, specific product lines can take on a life of their own because there is a natural tendency to extend existing product lines beyond their useful life. When this happens, good concepts and successful product lines are frequently extended into commercially unsuccessful ones.

Further evidence of the need for more market sensitivity in product planning can be found in the field of intelligent software. We keep discovering new applications for this technology, and some of them are devastatingly effective.

Others, however, are woefully inappropriate for their intended purposes. Developments in robotics, computer diagnostics, the physical sciences and a range of business applications are paying off. Yet approaches to creative decision-making have proved to be more complex, and inappropriate developments abound.

As a supplier, why market products that run counter to your market? Even if you bludgeon some commercial success in the end, it will not have been worth the time and expense nor the dent to your credibility in the customer's eyes. Planning with genuine utility in mind simply makes better business sense.

Boughton is a consultant at Deloitte & Touche in New York.

Maybe we like inky fingers

Paperless news delivery is old news, but it may never make it out of print

CHARLES P. LECHT

For as long as I can remember, a seemingly endless stream of journalists have appeared to suddenly discover the possibility that a computer-controlled video-like device may one day be used to receive and display what today's newspapers deliver.

Each time this realization hits, we are offered visions of the services future subscribers may expect and forecasts of the natural consequence of their arrival — the death of printed media.

These journalists betray their ignorance of high technology by trying to thrill us with descriptions that read like the kind of marketing literature we see from every computer manufacturer outlining current and future product lines. Add a description of all the interactive database services found in current computer network offerings, and there you have it: the future electronic newspaper.

The more adventurous ones take the big leap forward that suggests future news services and the media they'll use will be endowed with artificial intelligence. In those projections we are given to understand that we won't have to work to receive what we want; instead it will somehow be magically delivered straight into our brains.

What's in a word?

New words are coined to describe the electronic newspaper device. A recent *Los Angeles Times* article on the subject offered both "multimedia home information appliance" and "knowbot." Phrases such as these serve to suggest that their originators know something about the future of news dissemination that we, mere mortal readers, can only surmise.

We cannot help but suspect, though, that the writers don't have any more of a clue than we do of what the meaning of newspaper will be in an era devoid of the paper kind. There are many implications that are never addressed — what the word "news" will mean in that context; how it will be delivered; what we'll be wanting; and what kinds of "readers" will exist. In trying to describe a paperless future, we seem to be caught in Bertrand Russell's famous paradox — trapped in the envelope we wish to assay.

Stripped of their romance, the articles are always disappointing. The newspaper of tomorrow is never anything more than a PC with video capability (or a video with PC capability) linked into a network and endowed with little more than the capabilities now commonly found in PCs and videos — touch screen, fax, telephone and interactive communications. However streamlined these may become, nothing radically new seems to be in the offing.

Nothing's done it

As long as I have been in the computer field, which is longer than I care to remember, people have been predicting the demise of newspapers, magazines and books, saying that electronic media will replace them. But this hasn't happened. Television news reporting didn't do it. Time-shared news services, once the privileged province of but a few entities (publishing organizations, financial institutions and government agencies), are now available to anyone with the inclination, but even these haven't lessened our thirst for traditional media.

Even if all the news you read in whatever media were readily available on your boob-tube-cum-computer-display, would you opt to replace your newspaper? Not on your life. You can't wrap a fish in electronic media.

> IN TRYING TO describe a paperless future, we seem to be caught in Bertrand Russell's famous paradox — trapped in the envelope we wish to assay.

And portability considerations alone cannot explain this phenomenon. More seems to influence our desire for printed paper matter than we may understand. I suspect that it may be as important to our receiving the news as a glass is to our drinking water. It may even be possible that the word "paper" in newspaper has a special irreplaceable meaning like "air" in airplane or "snow" in snowmobile or that paper media may somehow be a key ingredient of the ecological system of which we are a part.

The biggest farce is the forecast that we will be able to obtain personalized news services, electronically delivered information that is preconfigured to our needs and ostensibly to our capabilities to comprehend. Doubtless some of this would be desirable, but I think that a little would go a very long way.

We need it

We'll never be free of the need for nonpersonalized methods of news creation. How could we browse or enjoy serendipity if the news were tailor-made?

Furthermore, given the heavy control over the content of our news exercised by governments and other powerful institutions, I shudder at the prospect of having news tailor-made especially for me (shades of George Orwell). There are safeguards in the way today's news is obtained. Inefficiencies in the mechanisms of delivery as well as the sheer multiplicity of sources and outlets work against the easy seizure of ultimate control by anyone.

You may get the idea that I am against an electronic newspaper in the future. I am not. I just don't know what it is.

Lecht is an IDG News Service foreign correspondent based in Tokyo.

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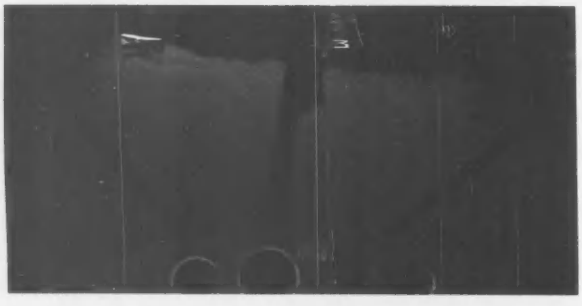

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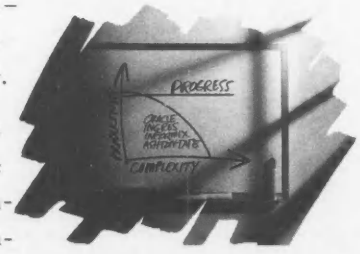

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HARDWARE SHORTS

HDS gives CPU boost

Hitachi Data Systems Corp. said recently that it boosted the performance of its four high-end mainframe computers by 15%. The move was made to counter IBM's summer announcement that its high-end Enterprise System/9000 processors were rated 11% to 17% faster than originally announced.

Wang Laboratories, Inc. picked a digital audio tape (DAT) drive from Archive Corp. for Wang's VS line and its first Extended Industry Standard Architecture-compatible personal computer, the EC 480/33C. The Archive Python Digital Data Storage DAT drive is priced at $4,995 and is available immediately to Wang users in 3½-in. and 5¼-in. versions. The drive can provide up to 2G bytes of storage.

Stratus Computer, Inc. has announced that the X/Open International open systems organization will judge the Stratus fault-tolerant systems to fully comply with the X/Open Portability Guide Issue 3 (XPG3). The XPG3 brand, as it is known, indicates that applications developed on the Stratus FTX Release 2 operating system will be interoperable with any other vendor platforms that have received the XPG3 brand.

VAXs earn praise, but few buyers

BY SALLY CUSACK
CW STAFF

Digital Equipment Corp.'s VAX/VMS users applauded the enhanced price/performance of the VAX 6000 and 4000 lines announced last month, but that has not translated into buying plans except for users with immediate power needs. Other users, who can wait a year or more, are eyeing the shadow of DEC's Alpha project, which is expected to lead to the next generation of VAXs.

Industry watchers and analysts had expressed concern that the new systems might not catch on because of the promise of Alpha — DEC's entry into the world of open architecture, reduced instruction set computing (RISC) systems.

"Our overall philosophy is that there will always be new equipment on the horizon, but if we need computing power today, we need it today, regardless of what is coming," said Jim Swartout, manager of technical support at Associated Insurance Companies in Indianapolis.

Associated Insurance has been using VAX equipment for more than two years. The company is considering adding several 4000-class machines in focused marketing units.

The first Alpha systems, based on specially configured CMOS chip sets manufactured by DEC, are due out in 1993. The boxes will accommodate both VMS and OSF1 operating systems, according to the vendor.

"We look at our requirements and then determine what we need," Swartout said.

Another DEC customer,

Continued on page 37

Loyal users take RISC

DEC is known for its strong presence in the scientific community, but a couple of longtime users in that sector are abandoning the minicomputer company in favor of RISC-based workstations.

Aerojet Propulsion Division in Sacramento, Calif., is looking at various RISC/Unix workstations currently on the market, according to Chris Arndt-Kohlway, a computer scientist there. These include systems from Mips Computer Systems, Inc., Hewlett-Packard Co. and IBM.

Aerojet, a DEC customer for 10 years, currently uses the VAX/VMS architecture for both Oracle Corp.'s Oracle database programs and several scientific applications.

"We're not holding our breath for anything DEC delivers," Arndt-Kohlway said, referring to the Alpha project.

Aerojet is committed to a future away from VMS and toward OSF/1, Arndt-Kohlway said: "We don't care about the VMS portion of Alpha, so we might as well shop around for what is available now."

A system manager at a large aerospace research firm on the East Coast said his company is also "slowly getting out of the VAX business."

While he described the new 6000 600 as a "nice machine," he added that it has all the "pricing philosophy of a midrange.

"I don't need the fast I/O. I need CPU horsepower because we run a lot of floating-point-intensive applications," he said. "Right now, I can get four or five Unix-based workstations for the price of one 6000."

SALLY CUSACK

Signing on-line yields productivity benefits

BY KIM S. NASH
CW STAFF

A new cliche may soon have to be invented: "Sign on the dotted line" may be replaced by "Sign on-line."

Installing relatively small imaging systems such as signature capture or signature recognition setups is a simple way for companies to get their toes wet in imaging while stepping up productivity, users and analysts said.

"It can be a finite project, as big or small at you want it to be," said Walt Novinger, head of Walt Novinger Consulting, a firm in Pacifica, Calif., specializing in imaging.

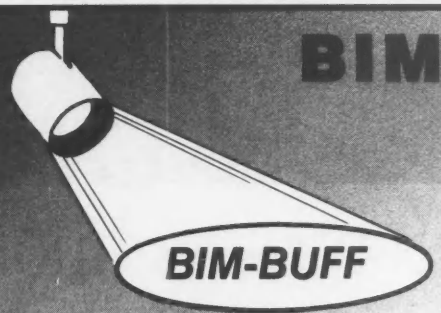
Installation of signature systems is difficult, in part because the technology has two faces: signature capture and signature recognition, said Jane Stanhope, an analyst at BIS Strategic Decisions in Norwood, Mass.

Capture requires a stylus that signers use to "write" their names on pressure-sensitive pads. As the stylus moves, it leaves behind no ink, but writing is displayed on a screen.

UPS customers *sign for deliveries with styluses and handheld computers, and the signature is forwarded to a mainframe*

United Parcel Service, Inc. became one of the biggest users of signature capture systems when it rolled out its $350 million Delivery Information Acquisition Device (DIAD) project

Continued on page 37



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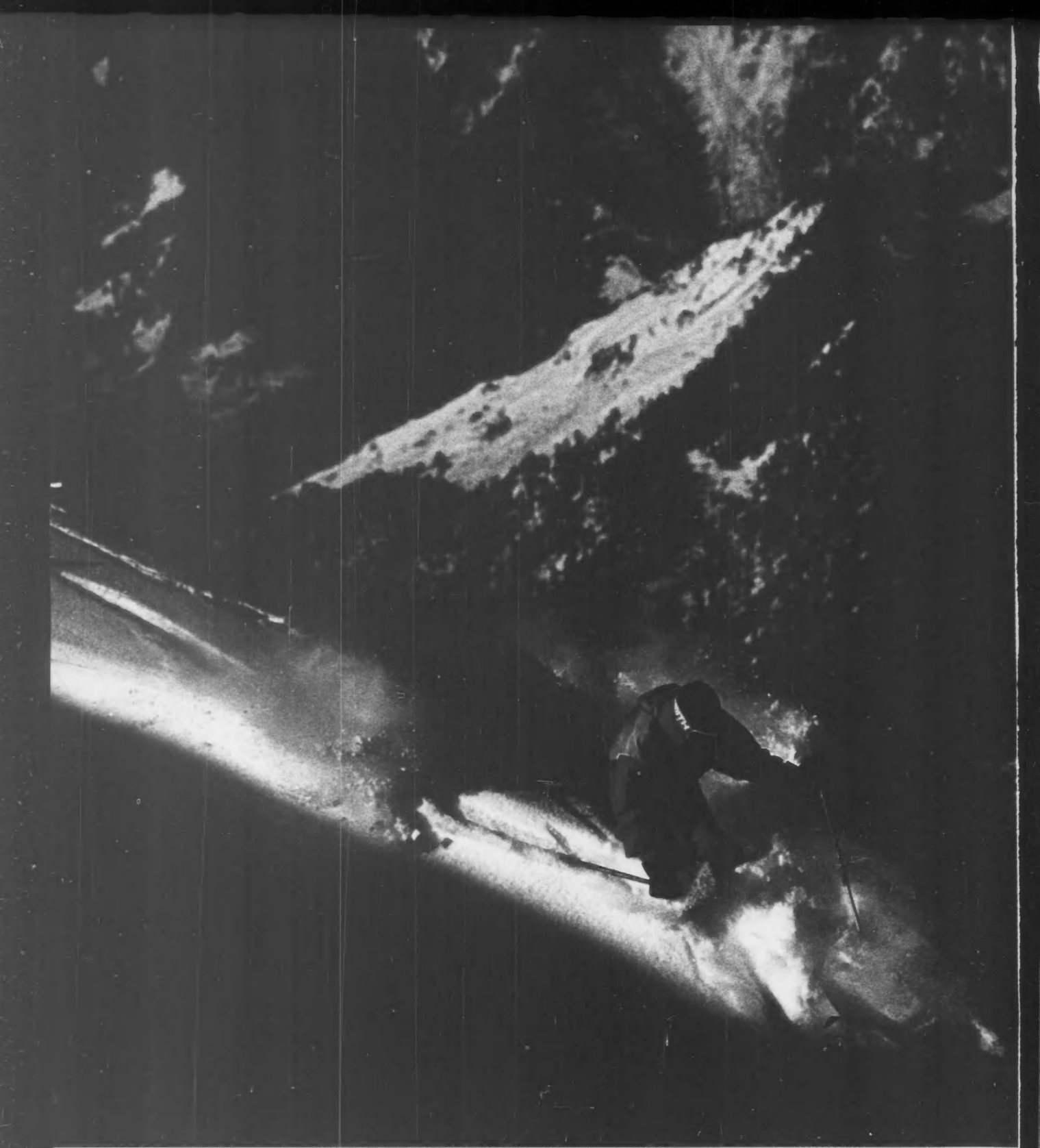

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However, this is only a small part of the power you wield, because NeXTstep's object library is completely open. That is, you're free to customize the behavior of any object via sub-classing, and you can also create new objects that instantly become as easy to work with as the ones we supply.

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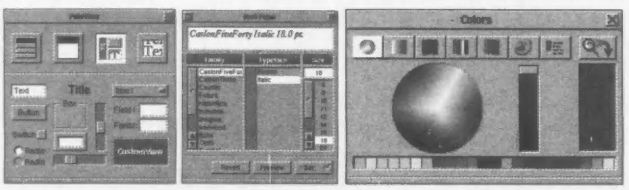
Of course, in the world of NeXT workstations, custom applications continue to offer unique benefits even after they've been deployed. They're easy to use and consistent, so training time is minimized. They offer stunning graphics and full access to all system services. In addition, they integrate seamlessly with each other, multimedia electronic mail and the "best-of-breed" off-the-shelf solutions.



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Coffee exchange gets TIPS from Tandem to brew up business

ON SITE

BY JOHANNA AMBROSIO
CW STAFF

Age may be an asset for coffee beans, but it does not do much for computers. The New York-based Coffee, Sugar & Cocoa Exchange, Inc. has taken that philosophy to heart and during the past three years has completely revamped or written from scratch most of its major applications.

Gambaro: *'We've come out of the cave'*

The most recent rewrite was of its trade-processing system, a paper-intensive system originally designed in 1980 when trade volume was less than half of current volume. During 1990, the exchange implemented its compliance and coffee-tracking applications, moved into a new data center, reconfigured its trading floor and installed a new Tandem Computers, Inc. computer.

Into the light

"We've come out of the cave and into the light — and we've done it in a short period of time," said Patrick L. Gambaro, senior vice president of floor operations and systems. The overall goal has been to become "a state-of-the-art exchange which will afford members the best service possible," he said.

Founded in 1882 as the Coffee Exchange, the existing organization was created by a merger of two exchanges in 1979; during the 1980s, it added options. Sugar futures and sugar options are currently the two most active markets.

The exchange has been averaging one major rewrite every year, said William H. Brown, assistant vice president of information systems. All the work has been done with its in-house IS staff, which has grown from three in 1988 to approximately 25 today.

"Before 1988, we used a lot of consultants," said Gambaro, who joined the exchange in early 1989 to head up the trade-processing project. "You get a better quality product if you do it yourself." Although he would not disclose specific numbers, he said that in the past three years, approximately 30% of the exchange's spending has been on technology.

A multimillion-dollar portion of that outlay was for the Trade Input Processing System (TIPS), which was implemented in stages from January through May. TIPS runs on a Tandem VLX processor, installed in April 1990 to replace a Tandem TXP now used for development work.

With TIPS, floor sellers and buyers fill out cards; every 30 minutes those cards go into the "write up" room on the floor.

There, the information is input into the Tandem by 155 data-entry clerks; from that point, everything is on-line.

The system automatically flags faulty information with some 90 error messages. As correct data is entered, TIPS seeks the other side of the transaction and then matches buys and sells.

The matched trade is then sent to the appropriate exchange members for review. If a trade is challenged by buyer or seller, it is brought to a clerk's immediate attention to be resolved throughout the day. Unchallenged trades are stored for the clearing process.

All-purpose system

"TIPS has done everything we thought it would do," Gambaro said. "It's cut the graveyard shift at the exchange and cut about 35 data-entry people from the clearing corporation." The latter has saved the clearing company at least $500,000, he said.

With the old paper-based system, clearing could take until 2 or 3 a.m.; now it is finished by 10 p.m., Gambaro said.

Customers seem satisfied. "The system is marvelous," said Paul Dapolito III, a floor broker with Dapco Brokerage Ltd. in New York. "I can get my position very quickly, and my customers get to see their trades during the day. With the manual system, we were unable to do that."

CW Chart: Michael Siggins

In addition, he said, the floor traders get to leave work by 3:30 most afternoons, compared to 6 or 7 at night under the old system.

TIPS was developed with a 35-member steering committee; specifications were finished in November 1990. "As they said yes, we were building it," Gambaro said. "By September, we had a system."

At this point, no more major hardware upgrades are planned. "In these times, with the recession and markets off by 20%, we're not looking to spend any major bucks," Gambaro said. "We will spend appropriately."

Plans for next year include enhancing TIPS with more fields for new kinds of data, adding cocoa to the coffee-tracking application and rewriting the Audit Trail System to interface better with the TIPS system. The exchange is also looking into wireless handheld terminals for the floor traders.

"At some point, you have to say, 'This product has outlived its useful life,'" Brown said. "You can't continue to patch and tweak forever."

Users urged to examine CASE prior to purchase

BY KIM S. NASH
CW STAFF

Users have been too easy on computer-aided software engineering (CASE) vendors, not asking tough enough questions, according to observers.

The only way for a company to be satisfied with CASE tools is to put both potential vendors and its own information systems staff through the ringer before making buying decisions, said Bob Bush, principal at Robert L. Bush & Associates, Inc., a consulting firm in Morristown, N.J., that specializes in CASE issues.

"Otherwise, the payoff simply doesn't justify the heavy investment of time and money," Bush said.

Many users leap into CASE without determining the state of their unautomated software development operation — and they therefore have unrealistic ideas about what CASE can do for them, according to Martin Herbert, senior technical associate at the Center for the Study of Data Processing in St. Louis.

In fact, about 80% of the 600 IS executives surveyed recently by Washington University in St. Louis said they did not cost-justify CASE purchases through a traditional, formal analysis. Instead, they bought products on "perceived value," Herbert said.

Meanwhile, people who labeled CASE projects "successful" were those who most carefully evaluated their internal development processes before buying any products, he said.

Herbert randomly surveyed 600 U.S. companies about their use, impact and evaluation of CASE tools. He found that no matter what size the company, successful users "had specific business objectives and knew what kind of applications they wanted to develop long before they thought about CASE."

Before buying a product that promises to speed and improve the quality of application creation, users should figure out just how slow and imperfect current development practices are.

A firm can begin to evaluate whether it is ready for CASE by considering the following issues:

- **Sky-high expectations.** The misconception of CASE as a cure-all is beginning to damage the technology's reputation, according to Bush, who said sales have slacked off this year from previous predictions, in part because word has spread that users are unhappy.
- **Status quo advocates.** Applications development tools can require extensive training, and a team not amenable to learning can sandbag a project. In addition to having a management advocate, CASE should be welcomed by a company's developers — the actual users of the technology.
- **Affordability.** CASE is not a onetime expenditure. Once a project gets rolling, companies often add developers, which requires buying more licenses and sometimes more hardware.

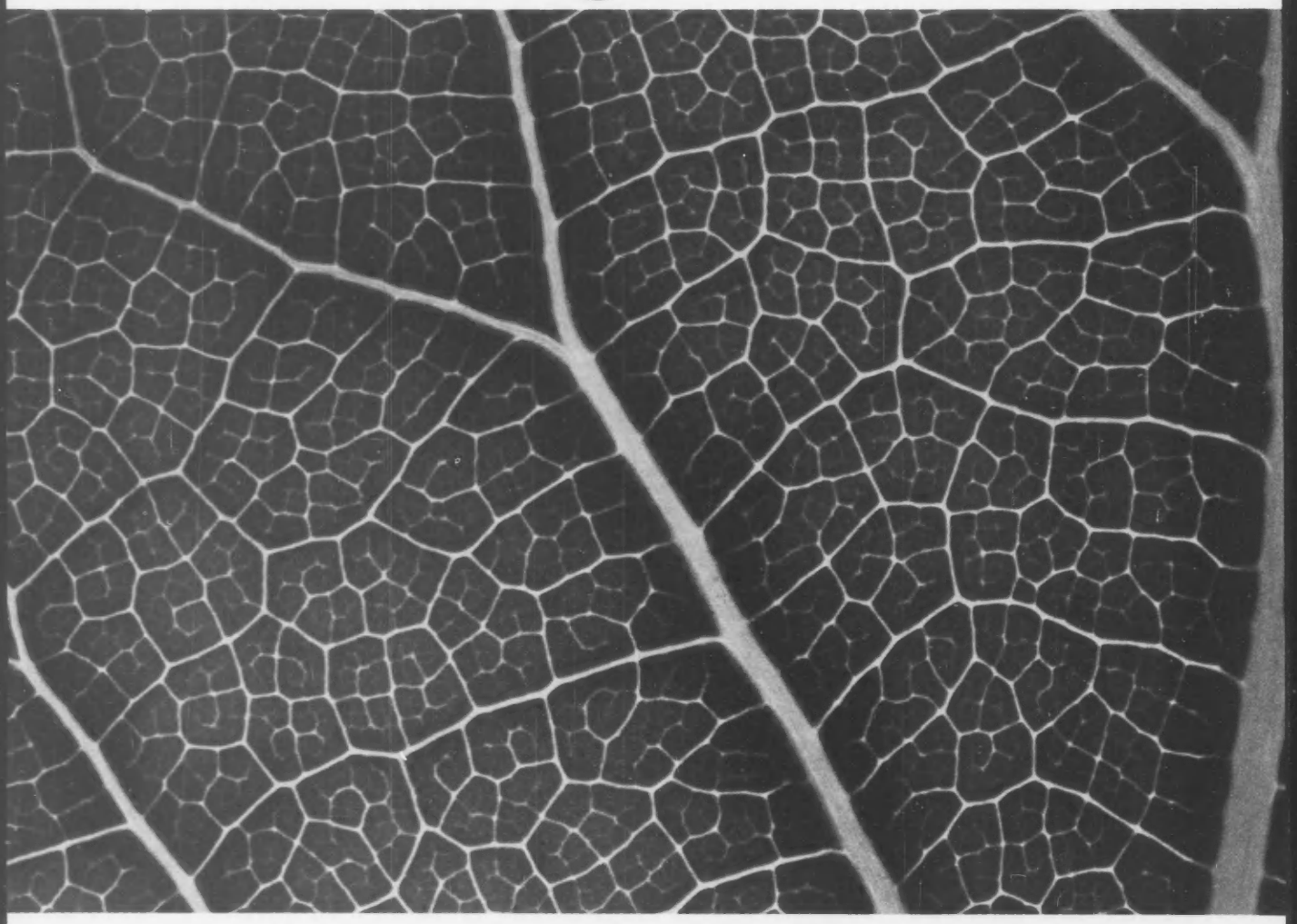
Putting vendors to the test

So you're ready to buy a CASE tool. Here's what to ask potential vendors.

- Is this product an integrated tool set or a module-by-module approach? In other words, do I need anything besides this product to do all development steps from design and coding to testing?
- If yes, do I have to buy the missing modules from you, or can I use tools from other companies?
- What kind of training will you give me for this price? Do I have to hire a third party for instruction?
- Can I test the product for at least six months before I make a final decision? Can you provide user references for me to check?
- What are your plans for the next release of this product? When will I see these enhancements?
- What kind of financial shape are you in? Are you partners with any other computer companies?

KIM S. NASH

Networking.



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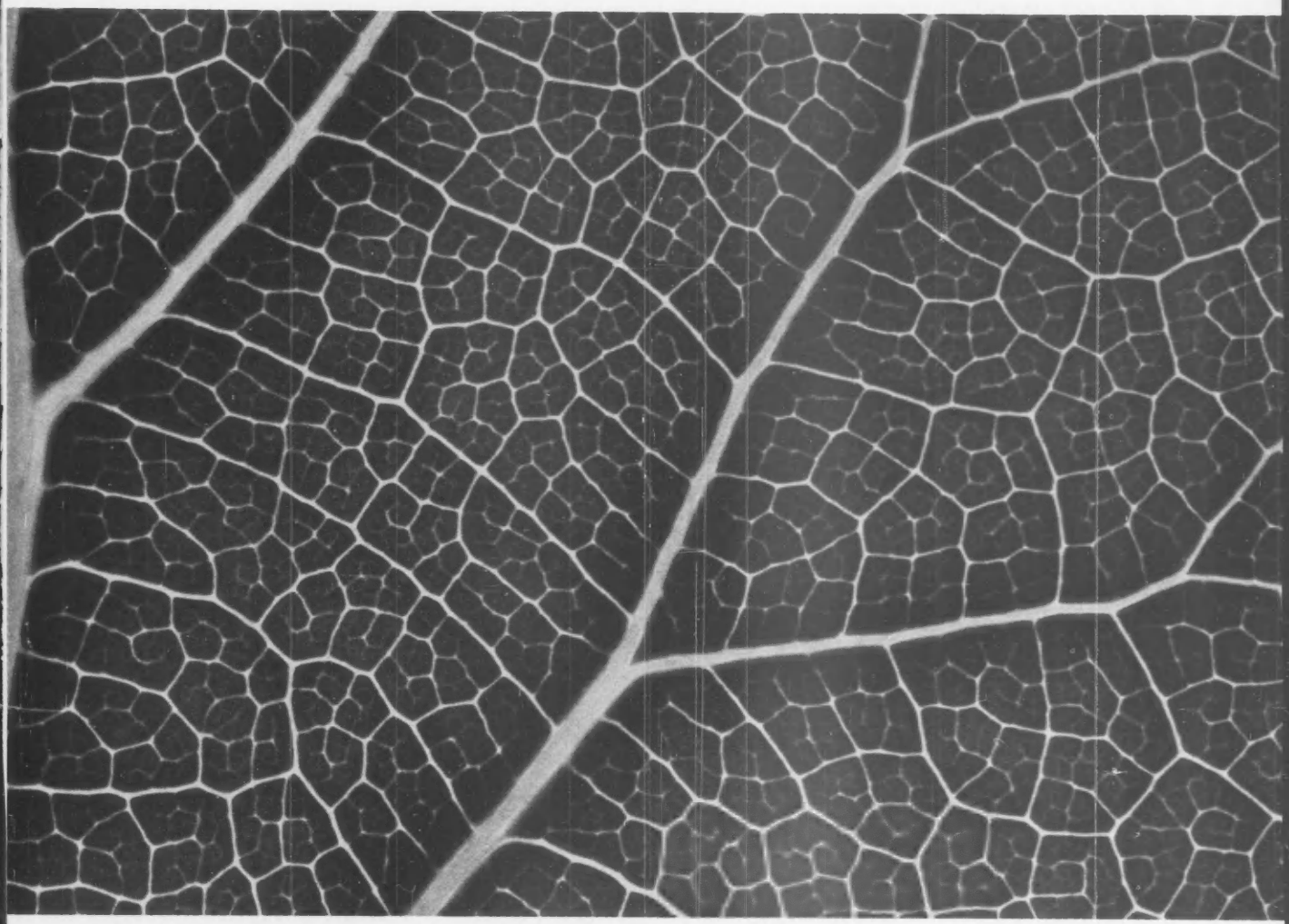

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Unify update may ease application ports

BY JEAN S. BOZMAN
CW STAFF

SACRAMENTO, Calif. — Unify Corp.'s updated release of its 3-year-old Accell/SQL tool set for Unix relational database management systems should simplify the porting of applications from one database to another, Unify users and industry analysts said last week.

"We use our financial applications software with the Unify database, but the same source code can now be made to run against the Sybase, Inc. database," said Ken Scott, president of SHA Computers, Inc. in Saratoga Springs, N.Y.

Scott has used the new Accell/SQL Release 2 for several months. Scott, whose company sells applications for Unify and Sybase environments, said separate tools would be needed to help applications run against the different vendors' databases.

Accell/SQL Release 2, an enhanced version of the Accell/SQL tool set, has been at beta-test and early support sites for several months, users reported. Its official announcement came on Oct. 30.

The enhanced Unify tool set supports Oracle Corp.'s PL/SQL development language, Sybase's Transact/SQL language and new ANSI specifications for the industry-standard SQL language.

Other new features include support for text and binary data types — to support multimedia images — and support for fixed-length and variable-length arrays. Accell/SQL supports both character- and graphical-based user interfaces, including the Open Software Foundation's Motif and Sun Microsystems, Inc.'s Open Look. It supports 16-bit kanji characters used in Japan, which the company said is important because Unify sells 15% of its software in Asia.

Some of the Accell/SQL users are value-added resellers (VAR), who must port their Unix applications to various RDBMSs as part of their product engineering program. Some VARs in the U.S., including Aurum Software, Inc. in Santa Clara, Calif., and SHA Computers, received the Accell/SQL Release 2 code months ago.

But many Unify user organizations are still waiting for an upgrade to the Release 2 code. The Royal Mint in Llantrisant, Wales, near Cardiff, has been using Accell/SQL since February to write code for an Oracle database and an Informix Software, Inc. database — both running on the same ICL Ltd. Unix machine.

"We didn't want our development staff to have to learn two different programming languages for the two databases," said David Allen, assistant director of information technology at the Royal Mint. "Depending on how we compile [Accell/SQL] code, it will run on either database."

ACCELL/SQL RELEASE 2, an enhanced version of Accell/SQL, has been at beta-test and early support sites for several months, users reported.

Allen said support for variable-length arrays is something the Royal Mint could use right away, but Allen was told that Release 2 would not be available in the UK until mid-1992. The arrays would allow programmers to more easily specify numeric values in a string of numbers, Allen said. "The lack of arrays is the biggest omission in the [Unify] system as it is delivered today," he said. "Right now, we've got to program around that, and it takes more time to do so."

Rob Norris, a senior analyst at State Fund Mutual Insurance Co., said he would like to get his hands on Release 2, but he does not know when it will become available. The insurance company's claim applications run against a Unify 2000 database on a Sequent Computer Systems, Inc. S 81 Unix machine. Norris said the firm had to write special C code to handle the variable-length array requirement, but he added that the custom code could be dropped once Release 2 arrives.

The new features in Unify's code are intended to provide "seamless integration" for applications written to run against various Unix databases, said Nico Nierenberg, Unify's president and founder. Even though Unify continues to sell RDBMS software, the company "leads with its tools" as it approaches end users, Nierenberg said.

Accell/SQL Release 2 ranges in price from $4,250 to $395,000, depending on a site's system configuration; it is scheduled for volume shipments in early 1992.

Industry analysts said Unify appears to be continuing its emphasis on development tools rather than on its two RDBMSs, Unify 5.0 and Unify 2000. One reason for this, they said, is that it has been difficult for Unify, with less than $40 million in sales, to pack its database with all the "bells and whistles" that have begun to show up in other RDBMS engines made by larger vendors.

In contrast, competition in the database-independent tools market for Unix systems is limited to a handful of independent competitors, including Uniface Corp. in Alameda, Calif., and Progress Software, Inc. in Bedford, Mass. Still, the Unix tools market could heat up, since Sybase plans to announce a new set of Unix tools in January, and Informix plans to unveil a graphical version of its Informix fourth-generation language in early 1992.

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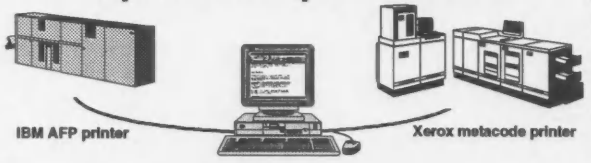

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Marines put war savvy on-line

ON SITE

BY GARY H. ANTHES
CW STAFF

QUANTICO, Va. — In January, U.S. Marine Corps strategists around the world will be able to tap into a network and find out what the Corps learned during the Persian Gulf war.

Initially, they will have access to the Corps' Lessons Learned library; later, they will be able to listen to battlefield interviews and view war film footage as well. Users say the system will be fast and flexible enough that commanders will be able to shift through terabytes of information to get data to support tactical decisions on the battlefield.

The Marine Corps University here is putting its library and archives on-line — on a mainframe-attached optical disc server reachable by some 25,000 personal computers worldwide.

The library now has some 80,000 items and expects to have 300,000 by the year 2000. Via the Marine Corps Data Network, Marines will be able to retrieve information from 6T bytes of text, still images, audio and video, then print it or mail it electronically to any mailbox on the network. The library will also be able, in a few hours, to extract data and produce custom, multimedia compact disc/read-only memory (CD-ROM) discs to support specific Marine Corps missions.

Extensive system

Col. William Pedersen, recently retired director of the Marine Corps Central Design and Programming Activity, called the system "the mothership for everything that defines war fighting — books, papers, maps, oral histories, speeches and live film footage."

Frequently accessed and high-speed buffered data will reside on magnetic disks in a Filetek, Inc. Storage Machine attached to an Amdahl Corp. mainframe here. Most of the library's electronic holdings will be stored on write-once read-many (WORM) optical platters also in the Storage Machine, a network archive server controlling one or more optical disc robotic devices, or jukeboxes.

According to Pedersen, on-line storage on optical disc will cost 10 cents per megabyte, or about 1% of the cost of magnetic disk storage.

The Marine Corps and Rockville, Md.-based Filetek developed a software interface between the Storage Machine and an electronic card catalog obtained from the University of Texas at Austin.

Users can search subject, author and title, retrieving abstracts and tables of contents with pointers to individual files, pages and even paragraphs in the Storage Machine. Items retrieved can be mailed across the network using IBM's Distributed Office Support System.

The network consists of six IBM 3090 mainframes and 25,000 desktop computers in Banyan Systems, Inc. Vines local-area networks spanning 19 time zones. The LANs are connected to Quantico by leased telephone lines and military satellites. The data is unclassified, but access to it is limited by Computer Associates International, Inc.'s Top Secret software.

Pedersen: *System is the mothership for war-related data*

The storage and retrieval system, which costs $950,000, will support the Marine Corps University's new $14 million research center. According to H. William Greenup, director of the center, the system will make research materials available to all 180,000 Marines, not just those few able to travel to Quantico.

Greenup said the system will also support the research center's publishing and symposium activities, providing a way to retrieve and publish on paper or CD-ROM subsets the university's war-fighting collection on topical issues to support specific Marine Corps missions.

All the hardware and software for the on-line library are in place, but the system will not be in full operation until the Marine Corps works out legal arrangements with book publishers through the Copyright Clearance Center.

Pedersen hailed the ability of WORM technology to precisely capture and reproduce multimedia information while preserving it unaltered. "We want the speeches of Chesty Puller to be exactly as he uttered them. We want Gen. Schwarzkopf's journals to be read exactly as he penned them. We want the warriors of the 21st century to view our collection of how we beat Saddam Hussein in the desert exactly as it happened and no differently."

Signing on-line yields productivity benefits

CONTINUED FROM PAGE 29

during the summer of 1990.

"When we started looking for signature stuff back in 1987, it just wasn't there," said Chris Smith, manager of research and development at UPS.

Since then, 50,000 of the Stamford, Conn.-based delivery company's 60,000 drivers have been outfitted with DIAD units, which are clipboard-size, Japanese-made computers loaded with image capture software co-developed by UPS and Toppanmoore, Inc. in Japan. The remaining 10,000 drivers will get DIADs by the end of 1991, Smith said.

Instead of documenting delivery in ink on rumpled papers fastened to a clipboard, package recipients sign for goods with pen-like rods and handheld computers.

After daily routes are done, drivers plug DIADs into racks at regional offices, where the delivery data is transmitted via an X.25 network to an Enterprise System/9000 mainframe in UPS' Mahwah, N.J., data center.

When someone calls customer service for package information, an automated retrieval system searches the ES/9000 database for proof of delivery, then prints it out to send to the client.

Among the benefits of the system are shorter evening checkout time for drivers and faster, more accurate tracing, Smith said.

DIAD is the first step in a larger imaging system for UPS that Smith said will nearly eliminate delivery-related paper. Delivery Information Automated Lookup System (DIALS) will ultimately let UPS clients dial in and search for package information, he said. Some regions in the U.S. are currently testing DIALS, which UPS plans to deploy fully by the end of next year.

Signature recognition, on the other hand, takes capture a step further. Users can store handwriting in such systems by either scanning it off paper or entering it directly via the capture method, for example. Once collected and stored in a host computer, the signatures can be called from personal computers or terminals to be compared with other samples.

San Diego-based Union Bank is implementing Vector 12, a host-based recognition system from Sterling Software, Inc., at its 176 California branches. By mid-1992, tellers using local Intel Corp. 80286-based PCs will be able to access 1.4 million customer signature cards stored on an IBM 3090 at the bank's data processing center in Monterey Park, Calif., according to Mark Schmidt, vice president of customer service.

"They'll be able to call up people's signatures and match them to checks being presented for cashing or other transactions," he explained.

Union Bank has been testing the system at three branches in San Diego since May, with what Schmidt called "significant success." So far, 1991 losses related to check forgeries are down about 50% from last year, he said.

These branches can verify signatures more accurately and quickly, he explained. Customers with accounts at other branches can now cash checks at the San Diego test centers in a few minutes. Previously, the same process could have taken up to a week while the check was matched to a signature stored on microfiche at the customer's home branch, Schmidt said.

Although the technology for image verification has existed for about four years, it has been too expensive for many users to take advantage of, according to Stanhope.

Potential users previously had to contract customized setups from vendors, including special hardware. However, during the past 18 months, costs have dropped, making way for more accessible, prepackaged signature gear, she said.

New VAXs earn praise, but few buyers

CONTINUED FROM PAGE 29

Larry Stiefvater, research principal at Kraft General Foods Research Technology Center in Glenview, Ill., said the company would not be purchasing anything soon.

"We're ahead of our users right now in computing capacity," Stiefvater said. The research center currently has three VAX 6520s in a cluster and several 6510s for development.

Robert Forster, supervisor of DEC systems at Sikorsky Aircraft, indicated that Sikorsky would most likely look to buy into the new 6000 600 line in conjunction with a vendor-outlined upgrade path to Alpha.

There will be no actual board-level upgrades from the 6000 600 to the Alpha boxes, according to DEC executives, because the I/O structure in existing VAX boxes would not be sufficient to support Alpha's compute-intensive architecture.

William Sines, director of midrange systems and server research at Technology Investment Strategies Corp. in Framingham, Mass., speculated that DEC may introduce a "transitory" box — perhaps a 6000 700 — to bridge the gap to Alpha machines.

The 700 would incorporate increased bus performance based on CMOS technology, Sines said.

For the present, however, Sines said both the 6000 600 and 4000 500 offer "excellent price performance," and if VAX/VMS users need to increase performance, the new announcements are "a good deal."

Dave Austin, software services manager at Arkwright Mutual Insurance Co. in Waltham, Mass., concurred that the new products are indeed a good deal.

Characterizing the newly announced 4000 500s as having the necessary growth potential to meet Arkwright's environmental needs, Austin said the company is in the process of analyzing the new systems.

The insurance firm is currently using eight 4000-class machines in its sales offices.

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EN ADVANTAGE.

Cross Access rollout offers EDA/SQL features

BY ROSEMARY HAMILTON
CW STAFF

Cross Access Corp. in Santa Clara, Calif., last week introduced a data access product set that it said offers capabilities similar to Information Builders, Inc.'s Enterprise Data Access/SQL (EDA/SQL).

For the short term, Cross Access will likely have its work cut out for it, one analyst said. Information Builders' EDA/SQL was showcased in September as a key component of IBM's Information Warehouse strategy. The companies have a marketing and development agreement, and Information Builders is a member of IBM's Information Warehouse International Alliance.

Cross Access does not have such a tie to IBM, nor has it signed up any customers for its product set, which also goes by the Cross Access name. However, an IBM spokesman said that based on his understanding of the product, it could give customers a choice of data access and delivery tools, which is what the concept of the Information Warehouse is about.

"The idea is to have open systems and have [customers'] products fit in," the spokesman said.

"Let's face it, Information Builders has the momentum," said Shaku Atre, president of Atre/Intec, Inc. in Rye, N.Y. "But there is always room for a better mousetrap. The next six months to a year will be their test period."

Cross Access officials acknowledged they have a big job ahead. "Our biggest challenge is that Information Builders is much larger than us," said Bronson Purdy, vice president of marketing and sales at Cross Access.

Cross Access, which was founded as DB Access, Inc., said the product set was designed to support a client/server architecture. Like EDA/SQL, it comprises several components that address data access issues.

The product will initially provide access to 14 relational and nonrelational database management systems through an IBM SQL-compliant format. These include the following: IBM's DB2 and IMS; Oracle Corp.'s Oracle/VM and Oracle/VMS; Computer Associates International, Inc.'s CA-IDMS; and Digital Equipment Corp.'s RMS and RDB.

The Cross Access product set will initially support DEC and IBM host platforms. Purdy said the company will announce additional database support next year.

License fees are based on system configuration. For example, a single-system license supporting DB2, IMS and VSAM on an IBM 3090 Model 400-class processor would have a license fee of $192,500.

NEW DEALS

Scottish bank adds HDS gear

The Royal Bank of Scotland PLC recently installed a Hitachi Data Systems Corp. HDS EX 420 "Summit-class" processor at its data center in London. The EX 420 replaces two IBM 3090 processors and will handle the London work load as well as additional work from the bank's Edinburgh facility.

Four Taiwanese commercial banks have placed orders totaling $12.7 million for **Unisys Corp.** A series mainframe computer systems. The formation of private banks in Taiwan follows the recent deregulation by the Taiwanese Ministry of Finance. The four banks are the Grand Commercial Bank in Taipei, Pan Asia Commercial Bank in Taichung, Far East International Commercial Bank in Taipei and Bank Sinopac, also based in Taipei.

Dun & Bradstreet Software has signed two health care industry contracts totaling more than $650,000 in products and professional services. The contracts were signed with California-based Nichols Institute and Michigan-based Garden City Hospital. Both hospitals will run the D&B Software financial packages on Digital Equipment Corp. VAX systems.

Aeronautical Radio, Inc. has awarded DEC a $15 million contract to provide systems integration and support services for Aeronautical's ARINC Data Network Services packet-switching network.

A fault-tolerant Unix system from **Tandem Computers, Inc.** has been selected as the core of a new command and control system to be implemented for the West Yorkshire County Police in Leeds, England. Tandem's Integrity S2 systems will serve as the platform for the computerized Incident Based Information System software. The contract is valued at approximately $4.5 million.

In the 70's, everyone wanted an easy-to-use relational database. They settled on Oracle. But it was slow.

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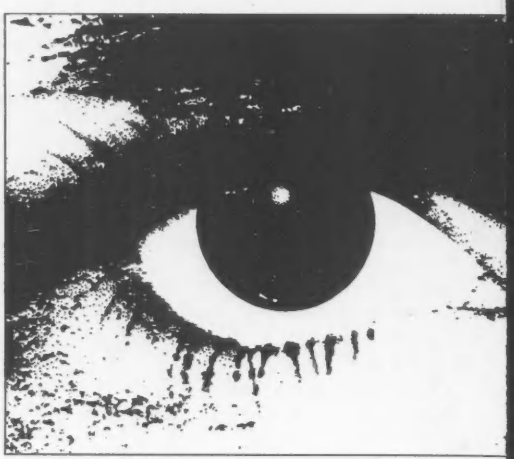
Which brings us to the small print.

Before you settle on Oracle or Sybase for OLCP, read the small print.



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INTERBASE	**YES**
ORACLE	NO
SYBASE	NO

Real-Time Event Alerters

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INTERBASE	**YES**
ORACLE	NO
SYBASE	NO

NEW PRODUCTS — SOFTWARE

Development tools

Software Eclectics, Inc. has released SE/One Version 2.1.

SE/One is a software tool that helps prepare Cobol programs for upgrade or conversion. It works with mainframe batch and CICS programs. SE/One now includes a reporting phase that flags nonstandard code sequences and unreferenced data and procedures. It also includes an interactive phase that allows multiple abstract views of the Cobol program.

SE/One 2.1 is priced from $2,600 to $35,000 for a site license, depending on the number of users. It runs on DOS-based personal computers.

Software Eclectics
730 Starcrest Lane
Marietta, Ga. 30066
(408) 926-3331

Foundation Software, Inc. has released 4G-Cobol, a mainframe Cobol tool for developing batch programs.

4G-Cobol integrates high-level commands with Cobol source code. Its features include advanced report generation, Cobol resource definition, automated sorts and a Cobol macro language.

Pricing is $30,000 for MVS systems and $20,000 for VM/VSE systems.

Foundation Software
422 Courtyard Drive
Somerville, N.J. 08876
(908) 704-0022

Utilities

BMC Software, Inc. has announced Version 1, Release 2 of Loadplus for IBM DB2 databases.

Loadplus loads DB2 tables up to four times faster than the DB2 Load Utility it replaces, according to the company. The new version, available immediately, incorporates a new Ignore option that bypasses writing-specified discard types, thus improving performance. The upgrade also loads nonpartitioned table spaces that occupy multiple data sets.

Tiered pricing for a perpetual license begins at $14,500.

BMC Software
Box 2002
1 Sugar Creek Center Blvd.
Sugar Land, Texas 77487
(713) 240-8800

Brickhouse Associates, in conjuction with Masc AG, has announced the availability of Masc-Cao, a VTAM application that enables a mainframe batch job to emulate a terminal.

Masc-Cao automates repetitive on-line functions and transfers data from existing sources, such as electronic data interchange, to on-line applications.

The product is available for VSE and MVS systems. Pricing ranges from $15,000 to $22,000.

Brickhouse Associates
151 Brickhouse Road
Patterson, N.Y. 12563
(914) 878-7721

The Adesse Corp. has announced Release 1.0 of VM/ESAid: 370/ESA Compatibility Modifications.

The product allows an XA/XC mode virtual machine to execute programs that run correctly in 370 mode but fail in XA or XC mode. The product's S370 mode can be enabled for all users or for specific users and programs.

Pricing starts at $13,000.

The Adesse Corp.
Suite 307
36 Mill Plain Road
Danbury, Conn. 06811
(203) 790-9473

HARDWARE

Processors

Digital Equipment Corp. has reduced the prices of its memory options for VAX and Decstation systems.

The price cuts range as high as 47%. The cost of a 64M-byte option for the VAX 4000 Model 300 is now $30,400; for the VAX 6000, $54,000; and for the Decsystem 5500, $20,160.

DEC has also reduced the price of its ESE20 solid-state disk drive by 27%. The 120M-byte drive now costs $80,000.

DEC
146 Main St.
Maynard, Mass. 01752
(508) 493-4479

Tricord Systems, Inc. has added a server maintenance processor and a disk drive expansion cabinet to its Powerframe line of superservers.

The Powersentry ($2,995) features an Intel Corp. 80386SX processor with up to 16M bytes of random-access memory. It is placed on the Powerframe server's bus and provides server and network monitoring. The Powerfile expansion cabinet ($6,750) offers 12 full-height bays for 19.2G bytes of storage capacity and a 500W redundant power supply.

The firm also announced an entry-level Powerframe server based on the Intel I486 processor. It includes 8M bytes of memory, a 415M-byte hard drive and a small computer systems interface controller. The Model 30L is priced under $15,000.

Tricord Systems
3750 Annapolis Lane
Plymouth, Minn. 55447
(612) 557-9005

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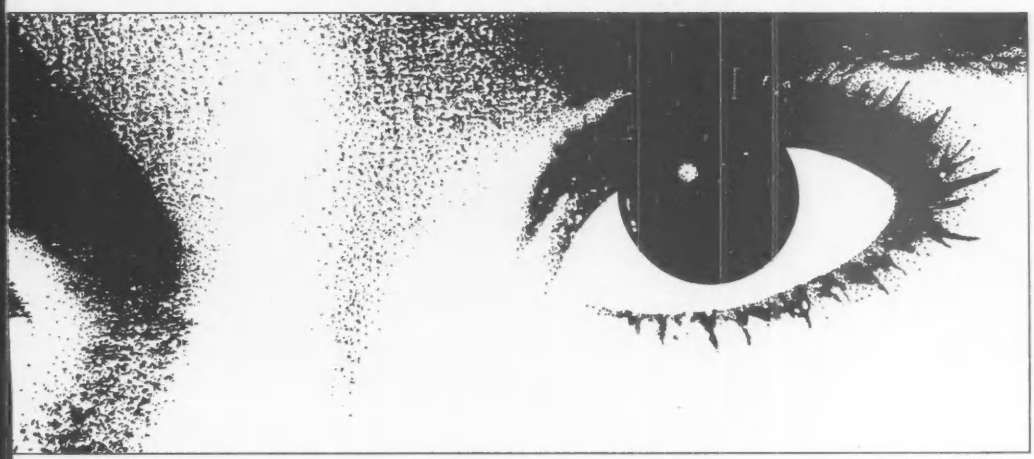

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INTERBASE	YES
ORACLE	NO
SYBASE	NO

Blob Filters
An absolute necessity for dealing with multimedia (blob) data in a heterogeneous environment. Store the data once, and let blob filters translate it among platforms and applications.

INTERBASE	YES
ORACLE	NO
SYBASE	NO

Automatically Activated Two-Phase Commit
Eliminate data loss or duplication in distributed networks. Only an automatic two-phase commit ensures that all remote changes are synchronized, without pages of polling and verification code.

INTERBASE	YES
ORACLE	NO
SYBASE	NO

Modular, Sequenceable Triggers
Only triggers in the data dictionary ensure that business rules (integrity) are consistently enforced, regardless of the application. Modular triggers maximize programming productivity and reliability.

INTERBASE	YES
ORACLE	NO
SYBASE	NO

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Software Craftsmanship

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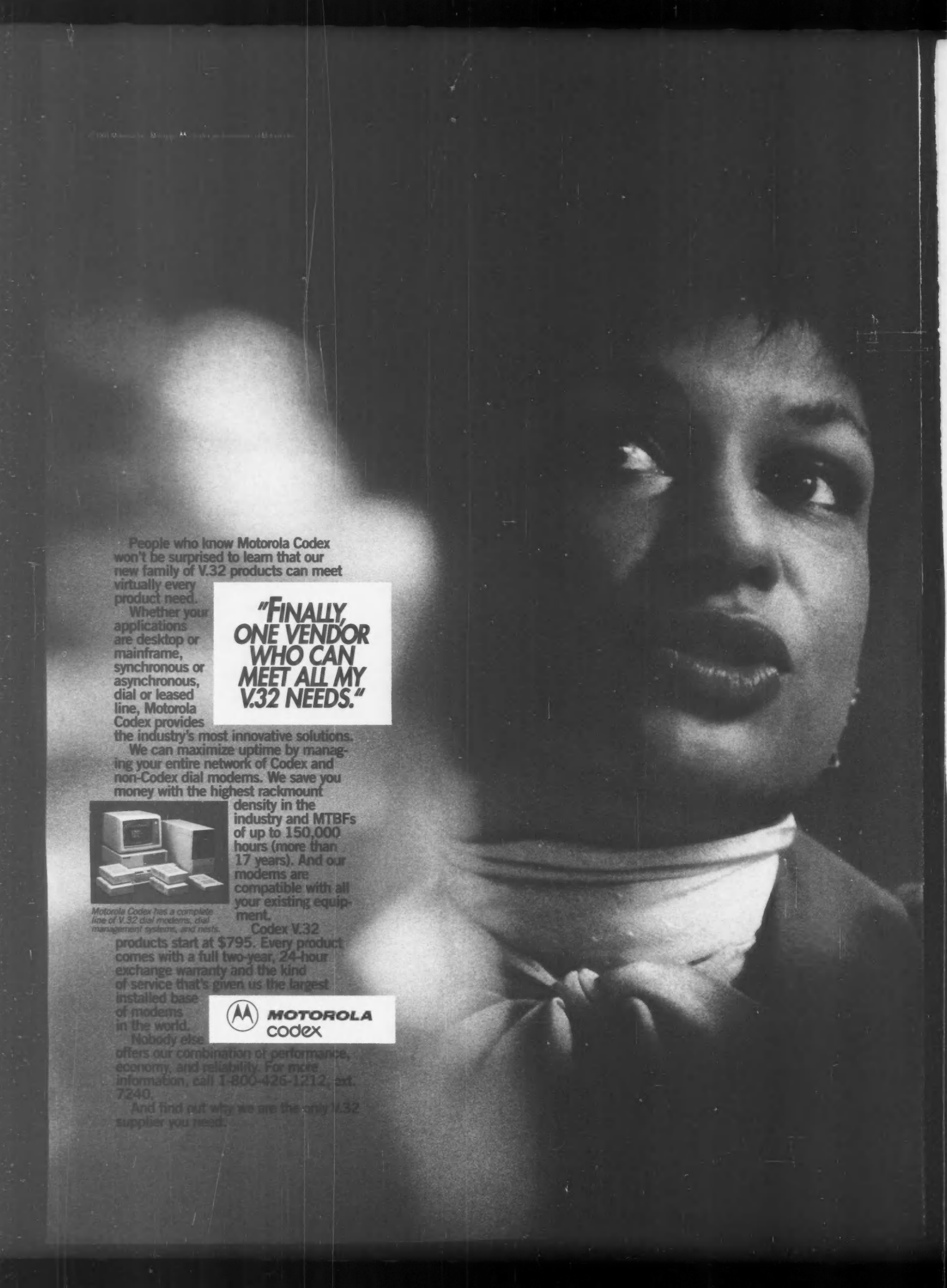
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COMMENTARY

James Daly

This duo may beat the odds

The computer industry is littered with the wreckage of technological alliances gone sour: IBM and Microsoft; IBM and Next; IBM and, well, you get the idea.

However, there's one budding liaison that may not only reverse the industry's rotten reputation for teamwork but has already begun pumping out what promises to be a steady stream of exciting business and consumer products: Apple and Sony.

Sony, a leader in the field of electronic miniaturization, helped Apple create the Powerbook 100, a trim, entry-level model in the sizzling field of notebook computers. Until recently, portable computers were often considered unhappy compromises. If they were small enough, they were often underpowered, and if they were powerful, they were often big and clunky. The 5-pound Powerbook 100 puts that dichotomy to rest.

With the newest technology alliance off to a high-flying start, industry observers are already speculating about what the dynamic duo will try next. Apple Chairman John Sculley has said the pair will continue to collabo-

Continued on page 50

Users weigh pros, cons of color portables

BY MICHAEL FITZGERALD
CW STAFF

As notebook computer vendors proclaim they have seen the Holy Grail — battery-powered color products — and promise they will reach it and start shipping product in 1992, users are already sorting out issues surrounding the new technology and making decisions on what, and whether, to buy.

"The opportunity to use color with, say, a multimedia presentation is there," said William Smith, technical manager at The Travelers Corp., an insurance firm based in Hartford, Conn. Some Travelers field representatives have begun to use 386SX notebooks for presentations. "Generally, though, we go into a presentation room that is so large, we have to hook up [the notebook] to a 20-in. display because there's eight or 10 people in the room. We're not convinced that there's a need for a small-screen machine" with color.

However, users contacted would generally like to have color in their portable environment, just as they do on the desktop. The main concern for users such as Stephen Anderson, information systems architect at the Department of Health and Social Services for the state of Washington, is cost. Anderson said that in good times, his department might be willing to pay perhaps $1,000 more for the ability to have a color screen, but in tight economic times, any increase in cost makes color a luxury.

Sharp has *promised active-matrix screens*

Users who can afford color — and that small number who have to have it — run into some other concerns, including the following:

• **Choice.** Both passive-matrix and active-matrix screens will appear on notebook computers in 1992. AST Research, Inc. and

Continued on page 51

Finance firm makes distributed move

BY KIM S. NASH
CW STAFF

WEEHAWKEN, N.J. — Paine Webber, Inc. has put in motion a plan to migrate its information systems architecture from a hierarchical to a distributed scheme, starting with all business applications the company creates from here on.

Paine Webber, whose data center is located here, said it expects to build all future applications to run on a variety of platforms — including workstations, mainframe and client/server setups — using an integrated computer-aided software engineering (CASE) tool set from Seer Technologies, Inc.

During the next five years, Paine Webber will phase out development of traditional mainframe applications in favor of distributed systems, according to Robert Benmosche, executive vice president for IS at the financial services firm.

"Our systems were designed around old [IBM] System/370 architecture, going back 20 years. It's time to change that," Benmosche said.

Paine Webber bought Seer's High Productivity Systems (HPS), a set of CASE tools, as well as Industry Data Model, a repository that reportedly stores, maps and correlates data names. HPS includes analysis, design, code generation, testing and maintenance modules that can build software for DOS- and OS/2-based computers, as well as host machines.

Benmosche would not reveal how much he paid for HPS, but a Seer spokesman said the price starts at $300,000, then goes up depending on the number of development workstations involved. "Paine Webber's package was not at the minimum," the spokesman added. The base price for Industry Data Model is $65,000.

The integrated option

Paine Webber evaluated tools from Knowledgeware, Inc. and Bachman Information Systems, Inc. before choosing Seer, which Benmosche called "the most integrated tool set."

Seer is a year-old joint venture between IBM and First Boston Corp., a financial services company in New York.

Although Paine Webber may rewrite a few existing applications using HPS, the emphasis will be on retraining staff members to program for a distributed environment, said Andy Fokolov, director of systems development. Within 1½ to two years, all new programs will be created with HPS, he said.

Recently, the company replaced its IBM 3090 mainframe with a new Enterprise System/9000 Model 620 mainframe, which will host HPS. Paine Webber is an IBM "strategic partner" and was one of the first users of the ES/9000 family of machines.

Benmosche said the company will integrate HPS with IBM's AD/Cycle in the future.

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Expert systems put Fedex in flight

ON SITE

BY MARYFRAN JOHNSON
CW STAFF

MEMPHIS — With thousands of letters and packages streaming into Federal Express Corp.'s major airport hub here every day, the critical task of tracking and launching aircraft belongs to a handful of Unix-based workstations equipped with expert systems software.

Fedex's five ramp tower controllers, responsible for tracking and scheduling more than 85 inbound and outbound flights daily, began using Sun Microsystems, Inc. Sparcstation 1s last year to handle tasks once done manually with grease pencils, blueprints and slabs of Plexiglas.

"This seemed like a good launching point into expert system technology," said Pat Crow, who manages the in-house development team that created the Ramp Management Advisory System (RMAS) running on the Sparcstations.

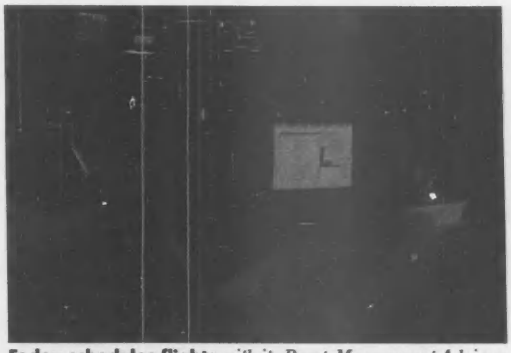
Now in its fifth release, C language-based RMAS is serving as a small-scale model for the courier giant's plan to eventually expand the use of networked expert systems.

The RMAS design will become part of the Global Operations Command Center, which is Fedex's long-range plan to encompass all pertinent transportation and scheduling data in a networked, distributed system based on IBM and Tandem Computers, Inc. mainframes and Unix-based workstations.

At this point, the five Sparcstations are linked via Ethernet backbone and Sun's Network File System to IBM and Tandem mainframes at headquarters here. The current command and control system — known simply as the Super System — resides on 13 Tandem VLX machines, which download and upload information as needed with the RMAS.

Get there on time

RMAS is used to synchronize flight processing time, ensuring the aircraft get there on time to deliver their packages on schedule. Multiple pieces of information are logged into the expert system through Sun's Open Look graphical user interface — everything from data on inbound/outbound flight arrivals and departures to the status of aircraft on the ground in Memphis or messages between air operations and pilots. Information is received from both the pilot and the ramp controller's own visual check of the landing area.



Fedex schedules flights *with its Ramp Management Advisory System running on Sun Sparcstations*

"We have 400-some acres to manage, and our people basically have to see that aircraft don't bump into each other," said Crow, manager of systems operations and expert systems. "Ramp controllers are there to ensure an efficient launch, and RMAS helps them do that."

Each aircraft has its own icon on the workstation screen, and its changing status is tracked through color-coded changes made automatically by the system. The database for the system is also homegrown, written by Fedex programmers after several commercial databases were rejected for lack of speed and functionality.

"With all five controllers working on the Suns, we can choreograph flight data and messages more efficiently and with less chance for error," said Catherine Addy, manager of systems control and ramp tower operations.

Daily reports of flight activity, which used to take two hours or more to write out manually, are now completed within minutes and logged into the Super System on the Tandem mainframes, which are connected to the Sparcstations via an X.25 communications line.

An IBM mainframe maintains systemwide schedules as well as information on all flights and package deliveries. Scheduling information is fed from the Super System to RMAS, which in turn updates the mainframes with launch data.

Information from the Sparcstations automatically updates the Super System, giving Fedex's ground crew and maintenance employees terminal-based access to that scheduling data. Crews in the maintenance hangar, for example, can review the Super System data for scheduled departures.

The Memphis hub is Fedex's largest in the country, followed by regional operations centers in Newark, N.J., Indianapolis and Oakland, Calif. Crow said the Indianapolis center is lobbying now to set up its own RMAS.

While the Sparcstation 1s have served the ramp controllers well so far, the group would like to upgrade the machines to Sparcstation 2s for greater speed and disk-mirroring capability, said Tim Gafford, a senior programmer analyst who helped design the expert system.

PC & WORKSTATION SHORTS

Microsoft to back MIT Media Lab

Microsoft Corp. and **MIT** have signed an agreement whereby Microsoft will become one of 26 sponsors of the MIT Media Technology Group. The MIT Media Laboratory research facility is dedicated to inventing and creatively exploiting new media for human well-being and satisfaction. As a sponsor, Microsoft is providing a grant to the Media Technology Fund. The Media Lab, located in Cambridge, Mass., was founded six years ago.

Hewlett-Packard Co. has reduced prices on seven Vectra personal computers by up to $900. Four models of the Vectra 486S/20 were affected as well as three 386/25 models. Additionally, the 486S/20 models now have IBM Video Graphics Array boards as standard equipment. Also unwrapped was free, one-year, on-site limited warranty service for all Intel Corp. I486-based Vectras.

HP also announced a joint development agreement with Verity, Inc., under which Verity will develop its Topic document management products to be part of HP New Wave Office on Unix-based HP 9000 machines.

Oakley Publishing Co. in Eugene, Ore., which publishes *Programmer's Journal* and *C Gazette*, has announced the creation of *Windows Tech Journal*. The monthly is scheduled to begin shipping in January 1992. It will concentrate on development tools and advice for programmers writing applications for the **Microsoft** Windows environment.

Mass Microsystems, Inc. last week expanded its family of storage products for the **Apple Computer, Inc.** Macintosh with the introduction of a rewritable 3½-in., 128M-byte magneto-optical disc drive. The drive, which uses removable cartridges, costs $1,795 in an external configuration and $1,495 in an internal configuration. Cartridges cost $129. The company also announced its Diamond Drive series of internal hard disk drives for the Macintosh II and Quadra families of Macintoshes. Those drives range in capacity from 120M bytes to 510M bytes, and they range in price from $849 to $2,899.

The **U.S. House of Representatives** has passed a bill called The Export Administration Reauthorization Act (H.R. 3489) that included a provision that would facilitate the export of PC software with encryption capabilities. Currently, PC software with encryption capabilities is classified as "munitions," and its export is reviewed by the U.S. Department of State and Department of Defense. It also requires export licenses. The Senate passed a similar bill (S. 320) last spring. The two bills will now proceed to conference in order to reconcile differences between the two.

XDB: DB2 Development on your PC.

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WEEK "The cost-benefit ratio is tremendous. PC development platforms—as opposed to the mainframe—offer consistent and rapid response, and richer tools for testing."
Jim Graves, Ford Motor Company

It Works.
If your application runs on XDB-Workbench it will run on DB2. No compromise. No expensive application recoding needed. The XDB-Workbench provides complete DB2 functionality on your PC.

COMPUTERWORLD "Because it supports DB2's syntax, error codes, data types, and semantics, XDB is an excellent DBMS for developing DB2 applications on a PC."
Richard Finkelstein, Performance Computing

It's Proven.
Over 10,000 XDB-Workbench installations are offloading DB2 development to the PC. It works perfectly with both Micro Focus COBOL/2 Workbench and Realia COBOL for complete DB2 application development.

DBMS "It runs on the mainframe just like it did in the PC environment."
Earl Hopkins, AT&T

so get off your mainframe and put XDB on your PC. Call 301-317-6800

xdb XDB Systems, Inc.

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COMMENTARY

Jesse Berst

GUI advantages

Before Windows 3.0, there were fewer than two dozen Windows development tools. Today, there are nearly 200. Many of these products also support OS/2 and Presentation Manager. If your graphical user interface (GUI) programmers aren't taking advantage of these tools, they're working too hard.

I expect even more products in the next 12 months, thanks to Microsoft's Open Tools strategy. Microsoft has revealed Windows' inner workings so third-party tools vendors can create better products. Likewise, IBM has a program to encourage OS/2 development tools.

"There are many wonderful products for Windows development and more on the way," says Joel Diamond, co-founder of the Windows Users Group Network, a national resource based in Media, Pa. "The hard thing is sorting through them all and deciding which ones to use."

Let's organize things so you can figure out how they fit together — and avoid the expense of sending your programmers down the wrong road. *Warning:* It's not easy to classify these products. Microsoft's Visual Basic, for instance, is part language and part applications generator. Likewise, Microsoft's Quick C and Borland's C++ are complete tool sets, not just languages.

But analysts get paid to express opinions, so I'm going to fearlessly set out the system I use. The GUI development environment breaks down into six key areas. For each category, I'll mention a few of the best-known products.

• **Programming languages.** A traditional programming language lets you manually code all or part of an application. Most commercial programs were written in C, Windows' native language, and built with Microsoft's Software Development Kit (SDK), a collection of tools that work with a C compiler.

But you no longer have to write in C, and you no longer have to use the SDK to create stand-alone Windows applications. Today, you can write in other languages: C++ (Borland C++, Zortech C++), Basic (Visual Basic, Realizer), Smalltalk (Digitalk, Smalltalk V), Actor (Whitewater Group's object-oriented language) and Cobol (Micro Focus Cobol/2).

Programming languages offer the most control and the best performance, but they have a steep learning curve.

• **Code generators.** A code generator gives programmers a jump start. It automatically creates chunks of code — usually for the critical user interface — as you point and click. You still have to roll up your sleeves and add your own program code. Caseworks, Inc. Case:W Corporate Edition and Bluesky Software's Windowsmaker Professional both generate C code.

• **Applications generators.** These are the most exciting products. They have so much point-and-click power you never have to see the user interface code. You generate your front end in point-and-click, drag-and-drop interaction and you're done — no code to look at. Then you add functionality to the interface.

You can use an applications generator to create complete applications, but many people find they are most valuable for rapid prototyping.

• **Resource builders.** Resource builders create and manage the dialog boxes, icons, menus and other resources of a GUI application (Whitewater Resource Toolkit, The Software Organization, Inc. Dialogcoder).

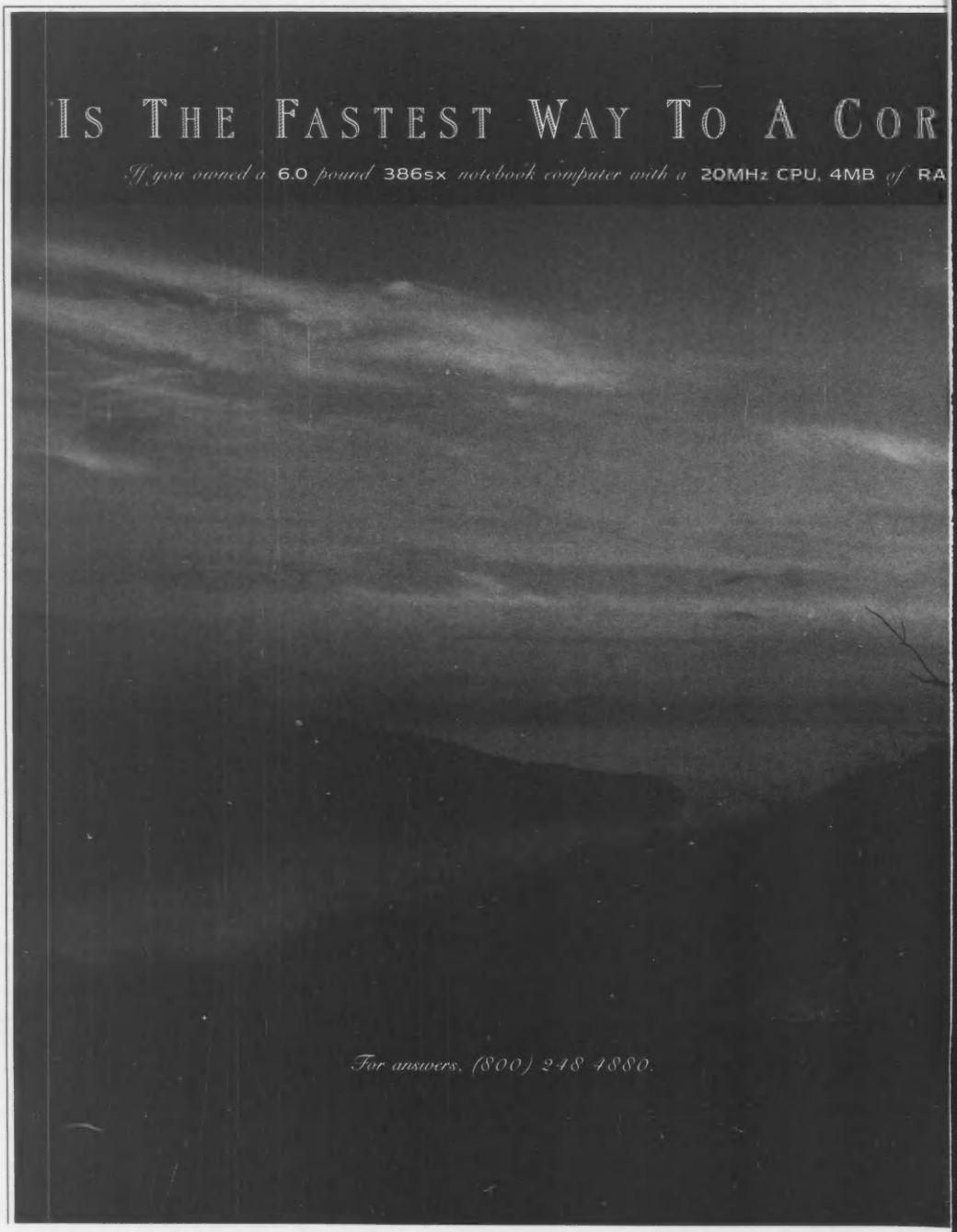
• **Add-on functions.** One of the great things about Windows is that you can plug in preprogrammed capabilities such as database links or multimedia capabilities from third-party vendors.

These add-ons come in several forms. Virtually every Windows programming product lets you work with preprogrammed Dynamic Link Libraries. As a result, we are seeing collections of prepackaged functions (Protoview, Intersolv's Control Pak/W). Visual Basic users can also choose from a growing array of third-party controls and add-ons. You can also get C++ class libraries that can be called and linked into your code.

• **Analysis, editing and testing tools.** This category contains such tools as debuggers and program editors. Today, most of these tools are moving away from their character-oriented origins and are becoming graphical. Windows has also inspired the creation of stand-alone testing and analysis tools. For instance, Microsoft's SDK for Windows 3.1 has a stress tester that simulates low memory conditions and a utility called Dr. Watson that keeps a log for tracing errors.

Which tools should you investigate? If you're starting fresh, don't make a decision until you've investigated the applications generators. They're quite good. But if your programmers have years of experience, choose tools that leverage that skill base. In either case, check out the growing collection of add-ons and class libraries that can save you the expense of reinventing the wheel.

Berst is the publisher of "Windows Watcher" newsletter, a monthly briefing service for software executives and corporate technology managers.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Voice recognition may add ZIP to postal service

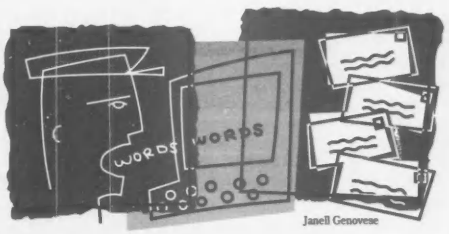
BY CHRISTOPHER LINDQUIST
CW STAFF

Voice recognition is slowly making its way into commercial applications. And while we may still be a few years away from Star Trek-style computing, several U.S. Postal Service branches are testing and using voice recognition systems to make mail delivery a more efficient and inexpensive process.

Verbex Voice Systems, Inc. announced that it recently signed contracts with some 24 post office distribution centers, including those in Albany, N.Y., Providence, R.I., and Oklahoma City.

Verbex supplies a variety of continuous-speech recognition systems including a Small Parcel Bundle Sorter and a Flat Sorter. Continuous-speech systems allow a user to speak conversationally to the computer.

John Fushino, senior industrial engineer at the post office in Albany, said he began looking at voice recognition, such as that supplied by Verbex, about a year ago. "The key for us would be flexibility," he said, indicating that as the Postal Service becomes more automated in the future, there will be less mail requiring hand sorting. This means it will no longer be economically feasible to have people trained for small sections of a distribution area; instead, a relatively small number of sorters will need to cover a much larger area. Voice recognition would facilitate that because a user trained on the voice system would be able to sort mail for any location without memorizing street addresses or ZIP codes.



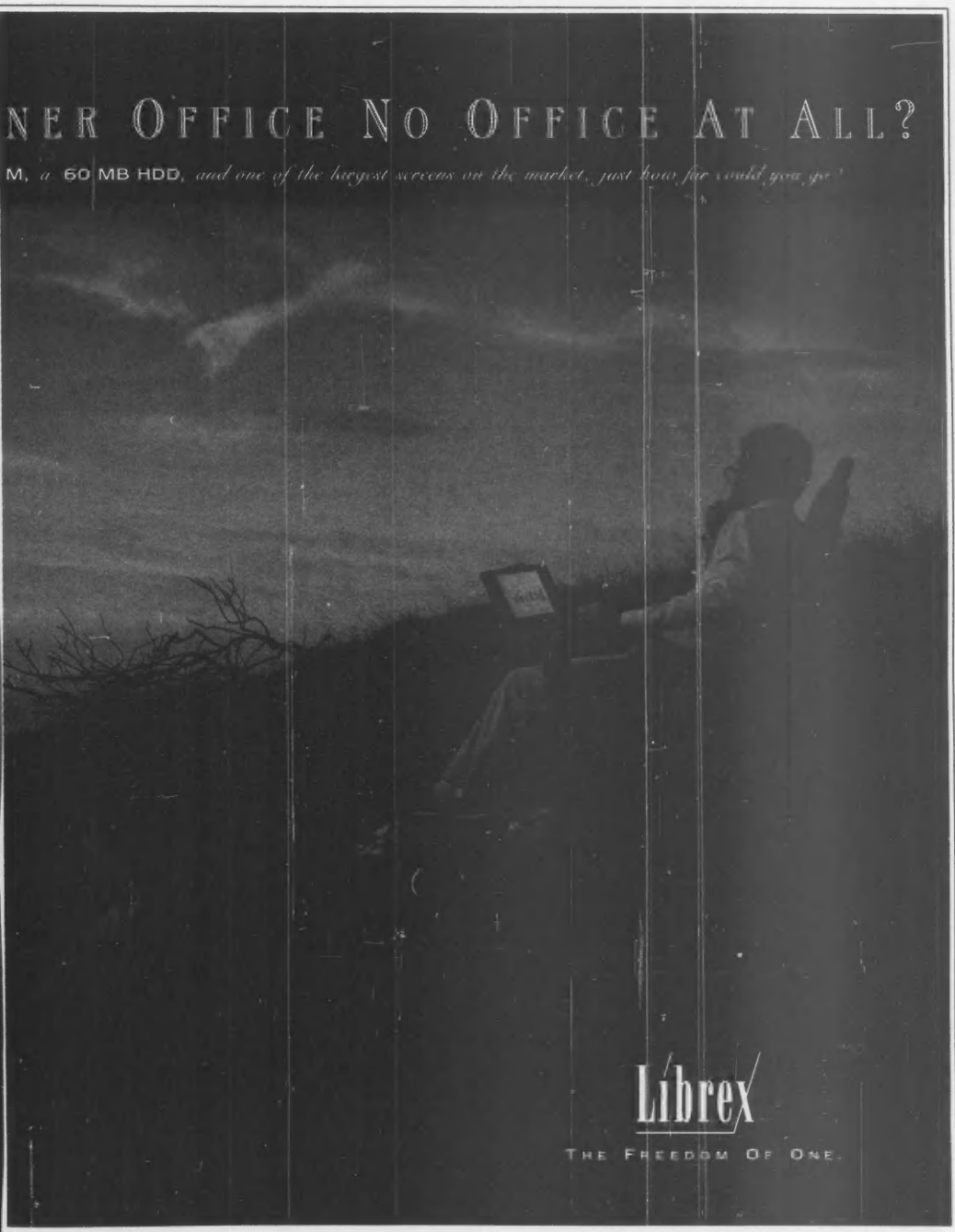
Janell Genovese

Fushino is currently using a Small Parcel Bundle Sorter but is looking to upgrade to a Flat Sorter. Verbex's Small Parcel Bundle Sorter prevents users from having to key in a ZIP code, thereby freeing both hands to manipulate the package. A Verbex "Voicestation," which contains voice-recognition boards and a 386SX-based computer, recognizes the ZIP code and returns the information needed.

The Flat Sorter goes further, allowing users to say an address and have the computer flash a number on a screen corresponding to its distribution area. Previously, users had to memorize all the addresses in a specific geographic area, a task that sometimes required weeks of training. Union rules also limited the number of areas an employee could be expected to memorize. Voice recognition eliminates that barrier.

Fushino said he currently has about 20 employees trained on the system, with about half using it regularly. He added, however, that switching experienced employees will be far less important than being able to train new ones quickly.

Wayne Nelson, a manager at the Postal Service technical support unit in Oklahoma City, said his group has been using continuous-speech, voice-recognition technology for about three years. He added that he uses the equipment for such functions as mail sorting, though he declined to comment on which companies' products he is currently using. However, Verbex has won bids to supply voice-recognition equipment to the Oklahoma City postal branch.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QA optimizes PC systems

Diagsoft, Inc. in Scotts Valley, Calif., announced a product last month intended to help users get maximum performance from their personal computer systems and Microsoft Corp. Windows environments.

QAPlus/Win performs an analysis of a PC system to identify hardware, software contention and Windows configuration problems. It checks such system components as the motherboard, multimedia peripherals, communications ports, disk drives and the keyboard and reports any problems or failures to the user.

The product also evaluates Windows-related configuration issues such as system performance and use of Windows resources. After evaluation, it lets the user edit configuration files to optimize Windows performance based on the QAPlus report.

System configuration and problem reports can be printed either on-screen or via a printer.

QAPlus/Win is scheduled for availability this month. It has a retail price of $159.95.

CHRISTOPHER LINDQUIST

Compaq Deskpro/M easily upgradable

Technology Analysis — A roundup of expert opinions about new products. Summaries written by Computerworld *Intern Lisa Davidson.*

Compaq Computer Corp.'s modular Deskpro/M 25-MHz 386, an Extended Industry Standard Architecture (EISA)-based desktop model, is well designed, easily upgradable and fast, reviewers said.

Performance: It is as fast as or faster than anything else in its class, according to benchmark tests.

Ease of upgrade: Upgrading the CPU of the 25-MHz 386 to a 16-MHz 486SX is easy, taking less than five minutes, according to reviewers at *PC Computing*. Each component is on a replaceable pop-out adapter card.

Expandability: The Deskpro/M features seven expansion slots, housing five slots for 16- to 32-bit EISA and two dedicated 32-bit slots. The chassis does not need to be replaced when upgrading. The company provides a used processor card trade-in allowance.

Service and support: Parts and labor are covered by a 90-day warranty. Upgradable boards have a one-year warranty.

Value: Without the hard disk or monitor, the 25-MHz 386 version costs $3,099. The 386 and other Deskpro/M models cost about 12% more than rival machines.

Compaq's Deskpro/M

Reviews	Performance	Ease of upgrade	Expandability	Service and support	Value	Overall
Byte 10/91	Modest performance for Compaq	Good board trade-in allowance	Smaller, simpler add-in boards	NC	Aggressive pricing	Affordable, upgradable quality
PC Computing 11/91	Fast	Easy	Many options	NC	Very un-Compaq price	Flexible, modular, good price
PC Magazine 10/29/91	Excellent	Easy	A good hedge against obsolescence	NC	Competitive pricing	Compaq quality, but no new innovation
Users						
Rick Upton, Egleston Children's Hospital	■■	■■	■■	▄▌	■■	Longer life span on computer
Tom Vayda, Kidder, Peabody & Co.	■■	▄▌	▄▌	NC	▄▌	Most modular product yet
Jay Flatley, Molecular Dynamics	■■	■■	▄▌	▄▌	■■	Architecture perfect for upgrades
Jim Funari, Christian Broadcasting Network	▄▌	■■	▄▌	▄▌	▄▌	Finally got serious on price
Analysts						
Andrew Seybold, Dataquest, Inc.	■■	▄▌	▄▌	▄▌	▌	Workhorse machine; premium price
Jerry Caron, Faulkner Technical Reports	■■	▄▌	■■	▄▌	▄▌	Always a solid PC

Key: ■■ Very good ▄▌ Good ▌ Fair ■ Poor Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment.

Vendor financial ratings

Analysts	Long-term stability	Short-term performance
Kevin McCarthy, Mabon Securities	▌	▌
William Gorman, Provident National Bank	■■	▌

Compaq Computer Corp. reported a net loss of $70 million for the third quarter, ending in September, as the result of a restructuring charge, derived from a work-force reduction and consolidation of operations. Sales were $709 million for the quarter.

Compaq responds

John Sweney, program manager, media relations:

Value: Users are responding favorably to our aggressive low pricing. The Deskpro/M family has been quite successful. Users can continue to expect high-quality, low-price computers from Compaq. We will offer more computers aimed at price-sensitive users, yet we will not abandon users who require high performance and increased functionality.

Dell System 333P grows strong with cache

Dell's System 333P

Reviews	Performance	Ease of upgrade	Expandability	Service and support	Value	Overall
PC Week 9/2/91	Good	Needs improvement	Satisfactory	NC	Satisfactory	Complicated upgrade
PC Magazine 10/29/91	Not for the power-hungry	Restricted upgrade options	Modest	Good toll-free hot line	Easy to use, lacks expansion	Narrow appeal
Users						
Daniel Mikulsky, An investment banking firm	■■	■■	▄▌	■■	■■	No complaints
Steve Lewis, Fried, Frank, Harris, Shriber & Jacobson	■■	▌	■■	■■	▄▌	Very happy with Dell
Gregory Bridgen, Sterling Software, Inc.	■■	■■	■■	■■	■■	Very versatile
Analysts						
George Thompson, Datapro Information Services	▄▌	▄▌	▄▌	■■	■■	Provides upgrade path
Andrew Seybold, Dataquest, Inc.	▄▌	▄▌	▄▌	■■	▄▌	Good performer
Leslie Fiering, Gartner Group, Inc.	■■	NA	NA	■■	■■	Never had to pop the hood
Jerry Caron, Faulkner Information Services	■■	■■	▌	■■	▄▌	Great if you don't mind mail

Key: ■■ Very good ▄▌ Good ▌ Fair ■ Poor Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey. NC: No comment.

Vendor financial ratings

Analysts	Long-term stability	Short-term performance
John C. Maxwell, Soundview Financial Group	▌	▌
Eric Zimits, Rauscher Pierce Refsnes	■■	■■

Dell Computer Corp. reported $12.4 million in net income on sales of $200 million for the second quarter of fiscal year 1992, which ended in August 1991. The rise in net income represents a 94% increase over the same quarter in fiscal 1991.

Dell responds

Don McCord, product marketing manager:

Ease of upgrade: The extra minutes required to remove components is a trade-off to get one of the smallest profile upgradable systems on the market. Customer acceptance has proven us right.

Performance: For some of our more price-sensitive customers, the added performance afforded by the cache is not worth $149 extra.

Dell Computer Corp.'s Dell System 333P, a modular 33-MHz 386DX Industry Standard Architecture system, offers an average base product but allows users to add optional cache features that make it a strong competitor, reviewers said.

Performance: Reviewers said that without the optional 32K-byte cache card, the base system gives mediocre performance. But for $149, the processor cache can be attached.

Ease of upgrade: According to *PC Week* reviewers, upgrading from a 386 to an I486 is time-consuming. Upgrading requires taking off the case, expansion riser and boards and throwing away the cache card, which is replaced with an I486 module. Users also cannot upgrade without installing a set of BIOS chips from Dell.

Expandability: The motherboard on Dell System 333P has three full-length ISA slots.

Service and support: Along with a toll-free hot line for technical support and a one-year warranty, there are enough upgrade manuals to fill a small bookshelf.

Value: Dell System 333P costs $3,519, including an IBM Video Graphics Array monitor and 4M bytes of memory. Adding the recommended processor cache boosts the price to $3,668. The price is reasonable, but the complexity of upgrading makes the system less desirable.

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☐ Microsoft Windows
☐ Apple Macintosh
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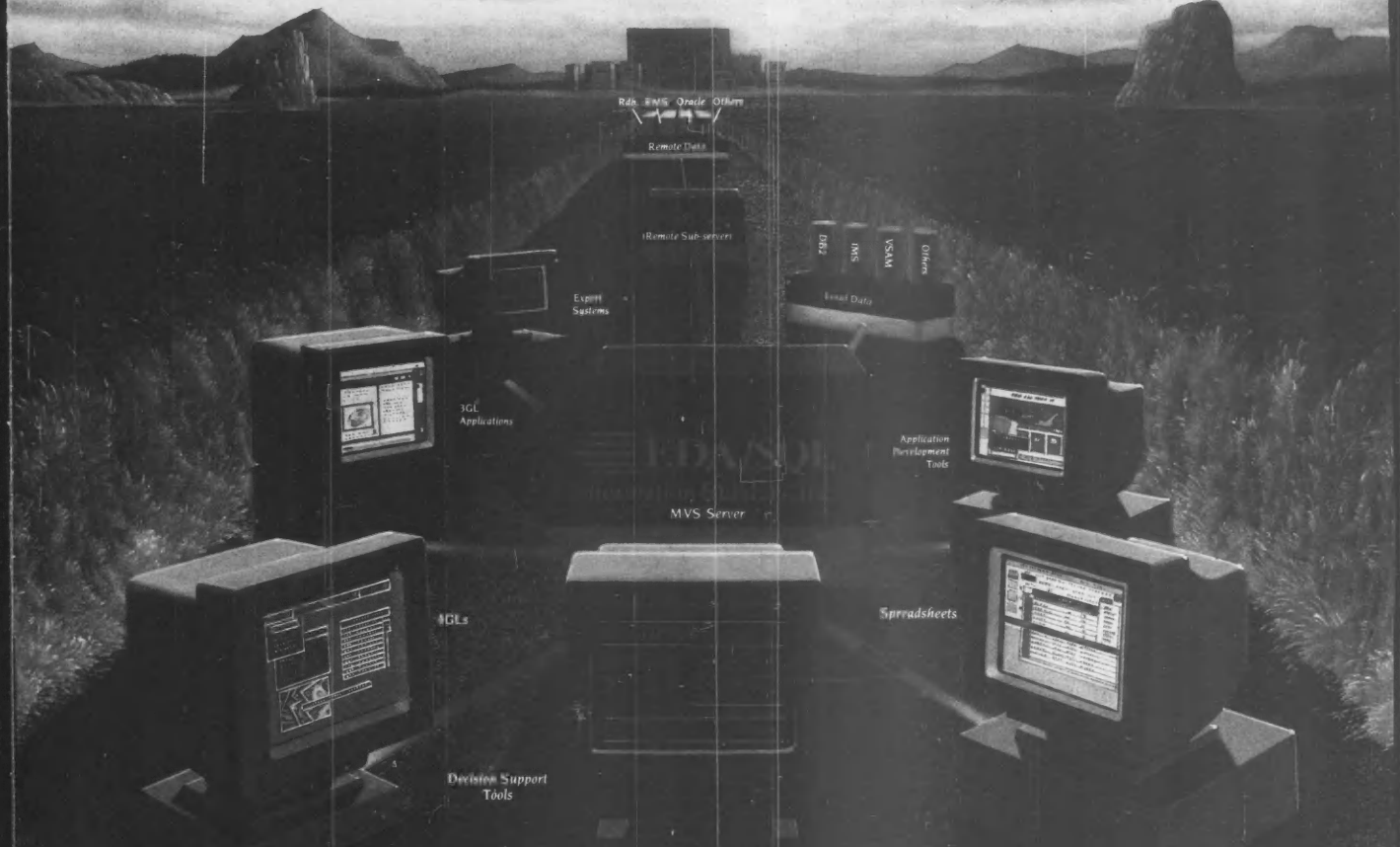

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Daly

CONTINUED FROM PAGE 43

rate, and sources indicate that Sony will work on at least one of the ultralight Powerbooks scheduled for a mid-1992 arrival.

Another likely scenario: Sony could team up with Apple and IBM in their joint multimedia organization, Kaleida. That venture will be charged with building desktop multimedia software and will eventually employ 300 people in the San Francisco Bay area, according to Apple officials.

Sony would make a natural extension to the Kaleida infrastructure. While Kaleida engineers are chasing the dream of multimedia computing, Sony is cranking out the high-resolution displays, optical discs and high-fidelity audio components used in those systems.

Sony also owns CBS Records and Columbia Pictures Entertainment — two gold mines likely to be tapped as the boundaries between computers, televisions and stereos continue to blur.

The Apple/Sony collaboration is also expected to target an emerging area that blends consumer electronics and PCs. Such a partnership is expected to yield a miniature PC that could be connected to a television set and use a compact laser disc to play games, movies and music.

"It's undoubtedly one of the most exciting areas to be in today, both in terms of potential sales and its ability to significantly influence society," said Pieter Hartsook, editor of "The Hartsook Letter," an industry newsletter in Alameda, Calif.

Apple engineers are reportedly working on a consumer electronics product that uses their Quicktime multimedia application as the core of a home computer and entertainment center. That product, however, is probably at least a year off because Apple isn't expected to finish Quicktime before the end of the year.

The Apple/Sony alliance promises success where others deliver failure because it is built around complementary needs.

Sculley has widely indicated that Apple will get into the consumer electronics market. Although Apple has no experience in that market, Sony has considerable manufacturing, marketing and sales expertise there.

Sony, meanwhile, has long desired to be a major computer supplier in the U.S. and Japan. Although it has been a longtime supplier of Apple disk drives and monitors, it has an unenviable losing streak with the larger components. In 1980, Sony launched a line of word processors in the U.S. just as PCs began making such machines obsolete. Sony's first PCs appeared in 1982, but it used a microprocessor that handled only 8 bits of data at once and was incompatible with the 16-bit IBM PC, which was then fast becoming the industry standard.

Apple and Sony are already quickly out of the gate, and the safe bet is that they will enjoy a symbiotic relationship like few have seen in this industry. Finally, it is a technological collaboration that doesn't seem likely to crash and burn at the boardroom table long before the dreams have a chance to become a very exciting reality.

Daly is a *Computerworld* West Coast senior correspondent.

RISC-based OCR family, stand-alone scanner offered

BY CAROL HILDEBRAND
CW STAFF

A number of products embracing optical character recognition (OCR) technology hit the market recently.

Umax Technologies, Inc. introduced the Readstation, a stand-alone OCR machine for office use.

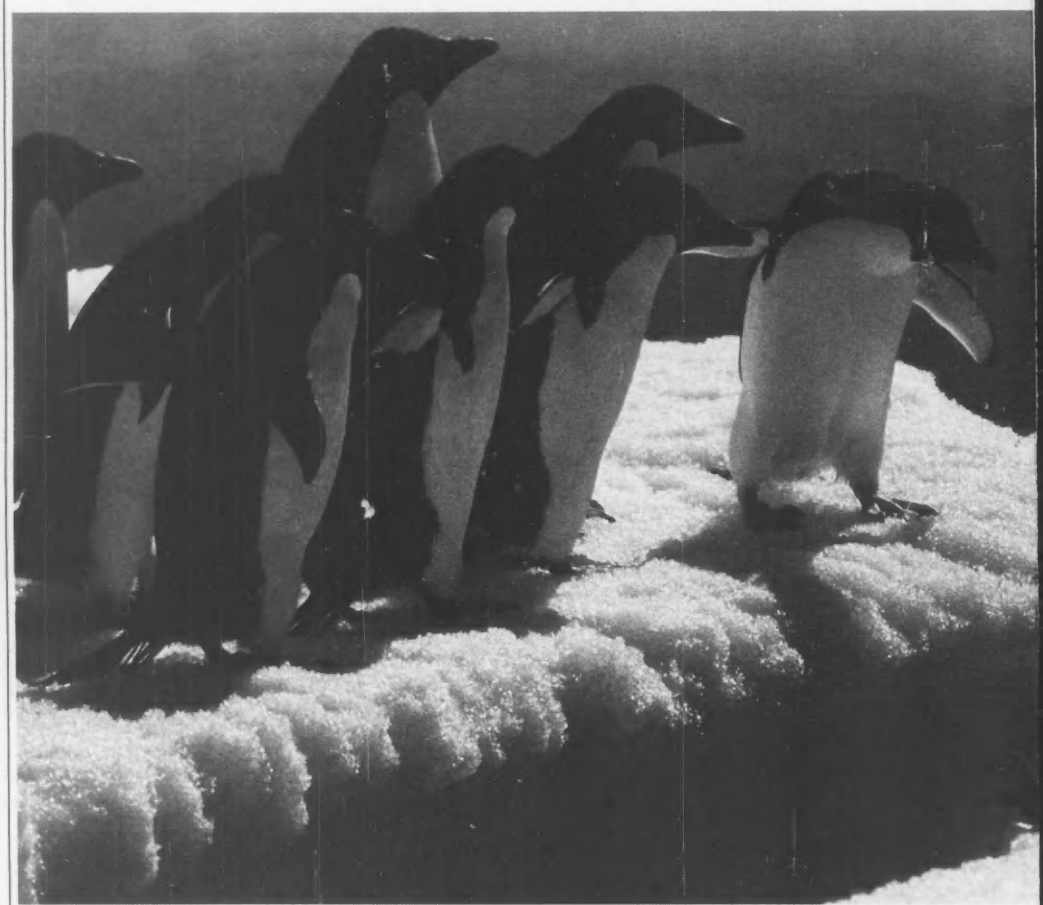
Readstation compresses a scanner, automatic document feed, dedicated computer and OCR software — Omnipage page recognition software from Caere Corp. — into a single package. The company said the product writes files of converted documents to a 3½-in. floppy disk drive, which supports DOS, Apple Computer, Inc. Macintosh and Unix formats. Specific word processing and spreadsheet formats can be chosen by means of a button on the control panel.

Calera Recognition Systems, Inc. unveiled the M/Series, a reduced-instruction set computing-based family of OCR systems. Steve Hayden, president and chief executive officer of the Sunnyvale, Calif.-based company, said the new products function at speeds up to 1,000% faster than competitors' products.

Two of the machines, the MX2400 and MX600, are equipped with scanners and reach speeds of 28,000 word/min. and 7,000 word/min., respectively. The scannerless versions support such third-party scanners as those from Fujitsu Ltd. and Hewlett-Packard Co. Pricing ranges from $24,495 to $44,995.

In addition, Delrina Technology, Inc. has signed a letter of intent to acquire OCR Systems, Inc. The company will produce extended character recognition technology, which recognizes handwriting as well as machine-based print.

One of us has to



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Packard Bell moves to bundle LANs

BY MICHAEL FITZGERALD
CW STAFF

CHATSWORTH, Calif. — Packard Bell Electronics, Inc., a dominant vendor in the mass merchandise channel that consistently sells enough personal computers to land on the Top 5 list of PC vendors, recently announced that it will sell turnkey local-area networks through its traditional channel.

Packard Bell will also step up its efforts to attract value-added resellers in an attempt to branch into the corporate market.

Packard Bell will sell networks with from three to 25 workstations, according to Dennis Cox, director of marketing. The typical file server is based on Intel Corp.'s 33-MHz I486DX chip and has dual floppy drives, a tape backup drive and a 426M-byte hard drive.

Dual-speed support

Cox said the Packard Bell machine will support Intel's P24 dual-speed chips when they become available. Base configuration for the machine will cost $14,499, and the price tag for a 25-node network is $61,000.

The turnkey networks will include Microsoft Corp.'s OS/2 LAN Manager, a Packard Bell 8 page/min. print server and a computer-controlled unlimited power supply.

Cox conceded that offering such high-price items through the mass merchandise channel is a relatively bold move, however, he explained, "We think the time is right. We're trying to bring to market . . . a no-tears implementation of a network for small businesses and work groups."

Packard Bell also announced two stand-alone computers, one based on Intel's 20-MHz I486SX/20, the other on its 33-MHz I486. These will come standard with extended Video Graphics Array resolution of 1,024 by 768 dot/in., 4M bytes of random-access memory, a 107M-byte hard drive and a software bundle.

Bundle up

The following software packages are included in the software bundle: Microsoft's DOS 5.0 and Windows 3.0; Lotus Development Corp.'s Write, Smarttix and a specialized version of 1-2-3 for Windows; and the Prodigy service.

Cox said Packard Bell will not give a list price, but he said he expects the I486SX/20 to sell for less than $2,400 and the I486/33 to sell for less than $2,800.

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Which, when you're in the business of building or using tools and utilities for DB2, is also a very important leadership trait to possess.

PLATINUM technology

Users weigh pros, cons

CONTINUED FROM PAGE 43

Dell Computer Corp. have announced notebooks with passive-matrix screens, while Sharp Electronics Corp. and Epson America, Inc. have promised active-matrix screens.

- **Clarity.** How much color is good color? Active matrix achieves better screen clarity because each pixel has a transistor assigned to it. Passive matrix uses more traditional methods of filtering, and some users complain that it looks "washed out." Also, both types of color screens tend to measure less than 9 in. diagonally.
- **Cost.** Active-matrix screens cost significantly more than passive-matrix screens. Dell and AST both have priced their base model passive-matrix notebooks at less than $5,000, while Epson has said it hopes to come to market with its active-matrix system at under $8,000. Sharp has not quoted a target price.
- **Availability.** Passive-matrix machines will be on the market first, while active matrix, inherently a more difficult process, will not appear in any volume earlier than the late second quarter of 1992.

"I'm being told that average [production] yields in active color are in the 15% to 30% range, but that some companies are getting yields [of] 70%, where some are at 5%," said Andrew M. Seybold, director of computer technologies for Dataquest, Inc. in San Jose, Calif. Seybold said he believes active-matrix screen production will be sufficiently high to make passive matrix "a flash in the pan."

Tim Bajarin, an analyst at Creative Research Strategies International, Inc. in Santa Clara, Calif., also thinks users will wait for active matrix to become reality.

"The real technology everybody wants is active matrix," he said. Bajarin added that he does not see active matrix becoming a mainstream technology until 1993, and it will not reach what he considers the magic price point of $1,000 more than monochrome until 1995.

"The bigger question for now is, can passive matrix fill the demand?" he said. Bajarin said he thinks users who do not have an immediate need for color will wait.

While Smith said business customers at Travelers "aren't sophisticated enough to distinguish between active and passive," other managers said they do notice the difference.

NEW PRODUCTS

Software applications packages

Ventura Software, Inc. has reduced the price of Ventura Database Publisher by more than 50%.

The product allows easy database formatting, sorting and searching, according to the company. It is now priced at $295, down from $695.

Registered Ventura users are offered a price of $199 through Jan. 31, 1992.

Ventura Software
9745 Business Park Ave.
San Diego, Calif. 92131
(619) 695-7891

Systems

Arche Technologies, Inc. recently announced the Arche Legacy 486SX-25 desktop personal computer.

The Arche Legacy 486SX-25 features 4M bytes of system memory, 128K bytes of cache memory and an upgradable processor architecture, according to the company.

Pricing starts at $2,698 without a hard drive.

Arche Technologies
48502 Kato Road
Fremont, Calif. 94538
(415) 623-8100

Fora, Inc. has introduced the NBX-386S/25, a 6-pound notebook computer based on the 25-MHz Advanced Micro Devices, Inc. AMD386SXL chip.

The system includes 4M bytes of random-access memory, a 60M-byte hard drive and a paper-white LCD with 640- by 480-pixel resolution.

The standard configuration is priced at $3,495.

The company also offers an optional two-slot expansion chassis for $395. Other options include an internal fax/modem device and a 10-in. external Super VGA monitor.

Fora
3096 Orchard Drive
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With Mitron's magnetic tape data communications terminals, you can transfer data off-line quickly and easily. Because Mitron terminals are completely independent of your mainframe, there's never a problem with incompatible software or disruptions to data transfer when the computer is down. Best of all, Mitron terminals are simple to install and operate. In 15 minutes you can be communicating with other Mitron terminals, bisynchronous terminals, or computers.

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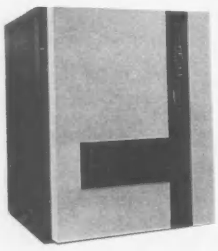
And Mitron terminals are real workhorses. They'll transfer data dependably day after day, for as long as you need them and at a price you can afford. Mitron's lease plans start as low as $311 a month — with no upfront cost.



Did we mention that Mitron terminals are fast? The STD 1600 can transfer data at 256KB; the STD 6250 at 384KB.

If you are still mailing your tapes... stop. Let a Mitron terminal transfer your data faster and more reliably.

Try a Mitron for 60 days.

Our special no-strings offer makes it easy to put Mitron's claims to the test. Try one of our terminals for 60 days. If you're not completely satisfied, we'll terminate your lease.

To find out how you can simplify your company's data transfer, call 800 638-9965. In Maryland, call 301 992-7700, or fax to 301 596-5119.

MITRON
Systems Corporation
2000 Century Plaza
Columbia, MD 21044

Macintosh products

Forval's SA14400 *modem for the Macintosh has a 14.4K bit/sec. base speed*

Forval America, Inc. has announced the SA14400 high-speed V.32 bis modem for Apple Computer, Inc. Macintoshes.

The SA14400 offers 14.4K bit/sec. base speed and up to 57.6K bit/sec. transmission with data compression. The modem can be upgraded in the future via software downloads.

The product is priced at $1,245. The price includes a coupon for reduced prices on cabling and Software Ventures Corp.'s Microphone II communications software.

Forval America
Suite F-440
28241 Crown Valley Pkwy.
Laguna Niguel, Calif. 92677
(714) 347-0100

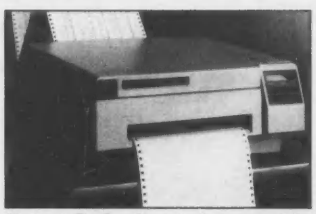
Microstrategy, Inc. has released the EIS-Toolkit for the Apple Computer, Inc. Macintosh.

The spreadsheet-based tool allows users to create executive information system (EIS) applications without programming. A version for Microsoft Corp.'s Windows environment will be available soon. Applications built with the tools will run on either platform, the company reported. Database front-end applications can also be constructed.

The designer version costs $995, while runtime versions cost $2,995.

Microstrategy
1 Commerce Center
Wilmington, Del. 19801
(302) 427-8800

Peripherals



Output Technology's Lasermatrix 1000 *selects the correct emulation*

Output Technology Corp. has introduced a continuous-form laser printer, the Lasermatrix 1000 Model 6.

The printer offers both Adobe Systems, Inc. Postscript emulation and Hewlett-Packard Co. Laserjet III compatibility. It automatically selects the appropriate emulation.

The Lasermatrix incorporates the Intel Corp. I960 processor and provides 16 page/min. output.

Pricing is set at $5,495.

Output Technology
2310 N. Fancher Road
Spokane, Wash. 99212
(509) 536-0468

Never
underestimate
the power
of a great
microprocessor.

Just look at the difference

Fifty million strong and counting. That's how many high-performance systems are powered by Motorola's 68000 family of microprocessors.

The 68040 is the 68000 family's newest member. As such, it inherits over $8 billion worth of 32-bit software.

And it's off to a fast start. Capable of delivering 22 MIPS at clock speeds of 25 MHz and 29 MIPS at 33 MHz, it outperforms any microprocessor at similar speeds.

Surprised? You shouldn't be. The 040 is a 32-bit, RISC-class performance microprocessor, with instruction execution approaching one instruction per clock.

The 040 was designed from the start with price/performance in mind.

this one's made.

Featuring on-chip cache and floating point units, it provides an unprecedented degree of integration and parallelism. Which means costly external memory accesses and wait states are nearly eliminated. The result is high sustained performance at a remarkably low cost.

So whether you're interested in desktop, workstation or commercial systems, 68040-based computers deliver the superior performance you're looking for.

To see how the 040 stacks up in real-life applications, just turn the page.

Next to NeXT,™ 486 PCs pa

No doubt about it, the NeXTstation™ computer is a knock-out. But appearance is only a small part of the package.

In fact, price/performance is where it really stands out.

Especially against the 486 based PCs (see chart).

This should come as no surprise when you consider the 68040 microprocessor inside the NeXTstation. Its independently operating caching system provides better sustained performance levels than the *i*486.™ And its powerful multi-bit manipulation instructions allow for easy GUI design. Not to mention

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le.

the NeXTstation's superb graphics.

With its NeXTstep™ object-oriented software, the NeXTstation has revolutionized programming. And with features like built-in Ethernet, the innovative NeXTmail™ messaging capabilities, and the power of UNIX®, it represents a breakthrough in "interpersonal computing." Yet it costs less than half the price of comparable systems.

In other words, you have every reason to consider the NeXTstation as your next system.

The Desktop Market—$/MIPS 040 vs. 486				
Microprocessor	System	Perf/MIPS	System Price	Price/Perf.
Motorola 040	NeXTstation	15	$4,995	$333
Intel 486	Compaq Deskpro	14.7	$12,999	$884

The NeXTstation tested has a 17" MegaPixel Display™ with 8 MB memory and a 105 MB fixed disk; source is NeXT Computer, Inc. The DeskPro has a 12" Color VGA Display with 8 MB memory and a 330 MB fixed disk; source is Workstation Labs. Prices quoted are manufacturers' list prices and are subject to change.

of their respective companies.

Against Hewlett-Packard,

Fast windowing performance and low cost aren't mutually exclusive terms. Even in a workstation. The HP Apollo 425e is an excellent case in point.

Quite simply, the 425e can run more simultaneous applications, more efficiently than the Sun® SPARCstation™ ELC. Just check out the Windowing X11 performance. The 425e clearly outperforms the SPARCstation (see chart). And at a price/performance point that blows it away.

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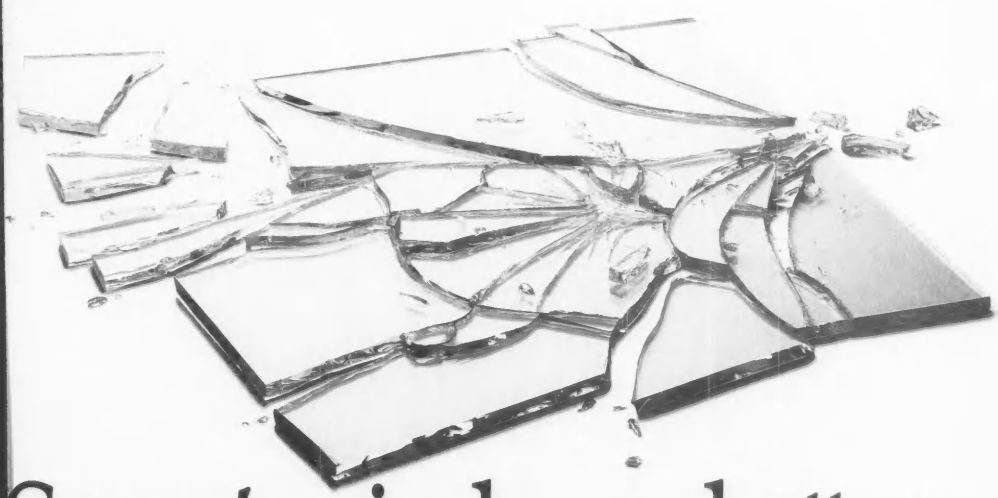

Sparc's windows shatter.

Then again, the 425e is a 68040-based machine. And the 040 incorporates RISC-like features such as integer and floating point pipelines, single-cycle execution, and load and store optimizations.

So now people who need high-performance windowing, local processing power, fast data analysis, crisp graphics and versatile networking capabilities can have it all with an HP Apollo workstation. Without having to pay the price.

The Workstation Market—$/Windowing X11 Performance
040 vs. SPARC

Microprocessor	System	Windowing X11 Perf (ops/sec)*	System Price	Price/Perf.
Motorola 040	HP Apollo 425e	11,000	$5,490	$0.50
SPARC	SPARCstation ELC	6,500	$4,995	$0.77

*Based upon X11 performance terminal emulation and 10x10 window management (publicly available benchmark). HP Apollo 425e configuration is 25 MHz, 8 MB RAM, diskless, 19" grayscale monitor. SPARCstation ELC configuration is 33 MHz, 8 MB RAM, diskless, 17" monochrome monitor. Prices quoted are manufacturers' list prices and are subject to change.

Head to head, Bull decks

The Bull DPX/2 Model 250 is a multi-user UNIX® system that gives you a wide range of choices. It's versatile, operating as a workgroup server, a departmental processor or an all-purpose system for small and medium sized companies.

It's powerful, thanks to a Motorola 68040 microprocessor at its core. With a burst interface on its bus controller, the 040 rapidly shuttles massive amounts of data on and off the chip. That translates to sustained peak performance in a demanding multi-user,

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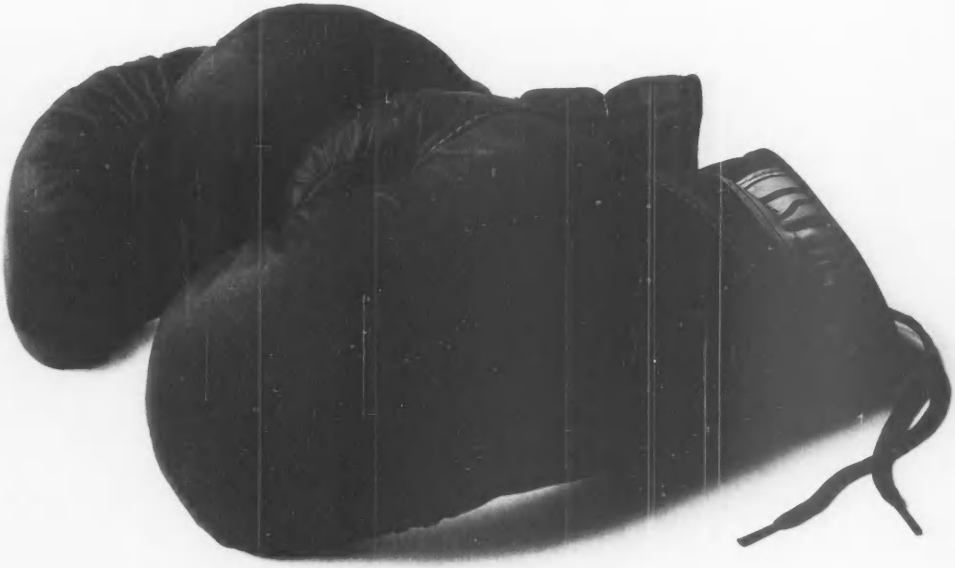

the competition.

multi-functional environment.

So when it's put through its paces against MIPS RISC-based machines like the DECsystem 5100, the Bull DPX/2 is awesome. Weighing in with 19.5 AIMS versus the DECsystem's 17.5. And costing nearly $900 less per AIM (see chart).

With that level of price/performance, it's no wonder Bull's Motorola-based server family has already sold over 25,000 multi-user systems. And more and more computer professionals are sold on Bull computers every day.

The Commercial Market—$/AIM 040 vs. MIPS				
Microprocessor	System	AIM	System Price	Price/Perf. ($ per AIM)
Motorola 040	Bull DPX/2 Model 250	19.5	$26,290	$1,348
MIPS R3000	DECsystem 5100	17.5	$39,940	$2,282

The Bull DPX/2 250 was configured with 25 MHz CPU and 20 MB RAM. The DECsystem 5100 was configured with 20 MHz CPU and 64 MB RAM. As published in the AIM® Performance Report II. Prices quoted are manufacturers' list prices and are subject to change.

And as for Macintosh, ther

When the first Apple® Macintosh® appeared on the scene, it radically changed the face of the personal computer marketplace. And now Apple is redefining the high end of the PC market with the Macintosh Quadra™ 700 and 900 computers.

Supporting up to 20 megabytes of RAM, the Macintosh Quadra 700 may be the most powerful personal computer ever to sit atop a desk. And with support for up to 64 megabytes of RAM, the Macintosh Quadra 900 is the most expandable Macintosh yet.

An Ingram Laboratories study published in October 1991 supports the conclusion that the Macintosh Quadra 900 performed 63% faster than the Dell 433P, 55% faster than the Compaq Deskpro 486/33L, and 20% faster than the ALR 486/50 when measuring the time taken to run seve

product names are trademarks or registered trademarks of their respective companies.

e's simply no comparison.

Both come with built-in networking support. And both support all Apple displays and up to 32-bits of color.

But speed is their real distinguishing feature. The graphics architecture is faster than ever. They have enhanced SCSI and NuBus™ capabilities. And each contains a Motorola 68040. As a result, they run most applications almost twice as fast as the powerful Macintosh IIfx. In fact, in a recent independent study, the Macintosh Quadra 900 outperformed 33 MHz and 50 MHz 486-based systems by as much as 63%*.

The speed, graphics and flexibility of the Macintosh Quadra computers set them apart from any other personal computer. In other words, Macintosh is, once again, in a class by itself.

*Macintosh and Windows 3.0 applications (such as Excel and PowerPoint). Apple and Macintosh are registered trademarks of Apple Computer, Inc. Macintosh Quadra is a trademark of Apple Computer, Inc. NuBus is a trademark of Texas Instruments. All other brand and

So when you're looking for real power in a computer, consider the source.

No matter which criteria you use. Whether you're evaluating by MIPS, X11 Performance, AIMS, or simply the time it takes to run an application. The systems that come out ahead in price/performance are powered by the 68040. The microprocessor that has pushed on-chip integration to a new level.

Add to that Motorola's reputation for technical support at every level. Hundreds of Field Application Engineers and Systems Engineers worldwide have a detailed understanding of the 68040. They stand ready to aid in the most intricate system design, or answer the most basic questions.

Finally, consider the fact that Motorola was a winner of the first Malcolm Baldrige National Award for quality.

All in all, you know what you're getting when you go with an 040-based system. And all we can say is, more power to you.

For additional information on the Motorola 68040, call 1-800-845-MOTO.

MOTOROLA

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COMMENTARY

Elisabeth Horwitt

Management indigestion

Nobody disagrees anymore that integrated network management is high on, if not topping, IS managers' to-do lists. Vendors are falling all over themselves responding to corporations' increasingly vocal demands for network management products. The result has been a network management smorgasbord that is giving a lot of IS managers indigestion.

There are three general types of network management products. First are proprietary products that were designed to manage a specific type of LAN, multiplexer, host network or other communications system. This type of product has been around long enough to become mature, dependable and highly functional. The problem is that these offerings only work for one vendor's system, providing no way to troubleshoot problems or measure traffic levels across a multivendor network.

The second type of product, now several years old, is the integrated network management platform. Examples are IBM's Netview, DEC's Enterprise Management Architecture and Hewlett-Packard's Openview. These platforms take the top-

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Push is on to connect the X.500 network

E-mail's potential may be missed without links

BY ELLIS BOOKER
CW STAFF

Electronic mail networks are getting hitched together faster than couples in a Las Vegas wedding chapel.

Unfortunately, this long-awaited activity, made feasible by the wide-scale adoption of the CCITT X.400 interconnection standard, has not been without problems.

In particular, users are grumbling about the complex addressing needed to send an X.400 message to its destination outside the corporation.

Today, a sender needs to know a recipient's exact X.400 address, containing up to eight segments including an organizational identifier that can have up to 64 characters.

Some heavy E-mail users are even getting new business cards embossed with their X.400 addresses.

X.500 crucial

Meanwhile, the push is on to deploy X.500, a 1988 companion standard to X.400 that specifies directory services across public and private E-mail systems. Many observers say X.500 will be crucial to realize the full potential of current and planned X.400 interconnections.

"Directory technologies and interconnected directories will facilitate the next generation of electronic messaging," said Gary Rowe, core services director at AT&T Easylink Services.

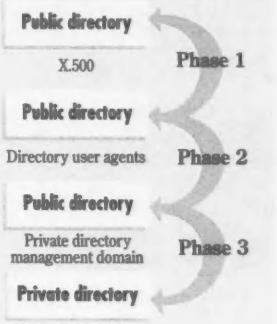
A so-called X.500 global Directory Information Tree would enable a user to interrogate attached X.500 directories — both those of public information networks and private E-mail systems — anywhere in the world, subject to security controls.

Easylink was one of the founding members of the North American Directory Forum (NADF). Established early last year and representing 15 public

Continued on page 54

Tying the knot

Closer links among electronic mail networks will be tested under a North American Directory Forum pilot program



Source: NADF

CW Chart: Janell Genovese

Inverse multiplexers filling WAN gap

ANALYSIS

BY JOANIE M. WEXLER
CW STAFF

The use of devices called "inverse multiplexers" to better control companies' consumption of wide-area bandwidth is being spurred in part because of a reluctance to pay for dedicated lines or switched services that may not get the use needed to cost-justify them.

Inverse multiplexers are devices that sit on a customer's premises, collect data from a fairly bandwidth-intensive application and separate it into 56K bit/sec. or 64K bit/sec. channels in the local loop.

They then synchronize the data and send it through the switched public network to a twin device at the receiving end, where it is remultiplexed. This switched virtual circuit is created when data is sent and then torn down.

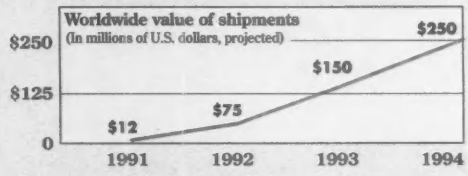
The equipment fills a gap in switched offerings in the local loop. Today, users can dedicate lines from 9.6K bit/sec. to 56K bit/sec. and from 56K bit/sec. to T1 (1.54M bit/sec.) services. Unlike in the long-distance network, there are no fractional T1 services yet offered from the 56K bit/sec.-to-T1 speeds, and such offerings are not expected for several years.

Most companies must dedicate a T1 line to their local-exchange carrier's office. Inverse multiplexing equipment, which is offered by companies such as Ascend Communications, Inc. in Alameda, Calif.; Digital Access

Continued on page 55

In step

Growth in the worldwide inverse multiplexer market is tied to the maturation of applications such as videoconferencing, imaging and internetworking



Source: The Yankee Group

CW Chart: Michael Siggins

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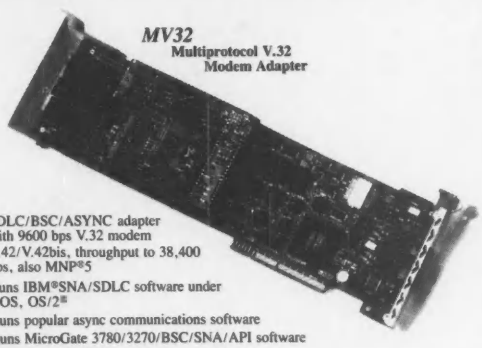
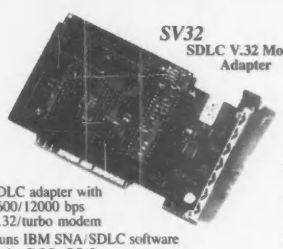
MV32
Multiprotocol V.32 Modem Adapter



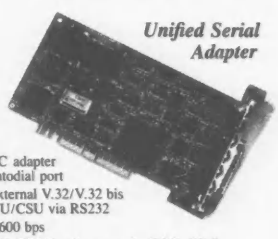
- SDLC/BSC/ASYNC adapter with 9600 bps V.32 modem
- V.42/V.42bis, throughput to 38,400 bps, also MNP®5
- Runs IBM®SNA/SDLC software under DOS, OS/2®
- Runs popular async communications software
- Runs MicroGate 3780/3270/BSC/SNA/API software
- $999 (includes SDLC autodial software)

SV32
SDLC V.32 Modem Adapter



- SDLC adapter with 9600/12000 bps V.32/turbo modem
- Runs IBM SNA/SDLC software under DOS, OS/2
- $895 (9600 bps model, includes SDLC autodial software)

Unified Serial Adapter



- SDLC/ASYNC adapter with SDLC autodial port
- Connects to external V.32/V.32 bis modem or DSU/CSU via RS232
- Speeds to 57,600 bps
- Runs IBM SNA/SDLC software under DOS, OS/2
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Push is on to connect the X.500 network

CONTINUED FROM PAGE 53

messaging providers and the U.S. Postal Service, NADF members are expected early next year to begin an experimental pilot aimed at proving NADF approaches to directory interconnection.

Phase 1 will include basic interconnection of public direction.

Phase 2 will test the use of directory user agents (DUA) software with the interconnected public X.500 directories.

ROWE AND HIS counterparts in the NADF are drafting a so-called Bill of Rights for E-mail users.

DUA, the search mechanism in X.500, is resident on the user's local computer and acts as the client in X.500's client/server architecture.

The DUA interacts with the public directory's Directory Systems Agent, the mechanism that handles transactions between public directories.

Phase 3 will bring forth commercial X.500 public directories and begin work on adding directories from private E-mail systems — called Private Directory Management Domains — into the mix.

Dates for the Phase 2 and Phase 3 tests have not yet been set because they hinge on the success of the Phase 1 experiment, Rowe said.

Rowe was quick to acknowledge that the NADF still has challenges ahead. For instance, the NADF must also devise settlement and accounting procedures for X.500 searches.

Another pressing issue is the settlement of security rules.

"We're working up front to deal with security issues," said Rowe, the current chairman of the NADF security and privacy group. He added that the NADF "has no intention of listing users who don't want to be listed."

Indeed, Rowe and his counterparts in the NADF are drafting a so-called Bill of Rights for E-mail users.

At the same time, the NADF has taken a serious look at the global nature of messaging and has liaison relationships with the European Workshop on Open Systems and the European Telecommunications Standards Institute.

Not totally successful

Meanwhile, the experience of the first production quality field test of X.500, while useful for learning, "hasn't been totally successful as a service," said Marshal T. Rose at Dover Beach Consulting, Inc. in Mountain View, Calif.

Begun in July 1989, the Internet pilot project had an objective of an electronic white pages. But, according to Rose, the technology is complicated, training for it is difficult and existing implementations and end-user interfaces are not totally satisfying.

In addition, Rose said, X.500 by its nature seeks to "export" a uniform information infrastructure, but "no such structure exists today for organizations."

Finally, there is the political dimension of X.500. As Rose explained it, the incentive for companies to allow their directories to be interfaced with an X.500 service is "inverted."

Put another way, companies find value in having the rest of the world added to a common directory but may not want to add their directory, both because of security/privacy concerns and because of institutional inertia.

At your server

Hewlett-Packard Co. recently announced a joint development agreement with Touch Communications in Campbell, Calif., to bring out a scalable, Unix-based X.400 messaging server. The server, an HP 9000 Series 800, will run a ported version of Touch's Worldtalk PC E-mail Gateway.

Microsoft Corp.'s Mail for the Macintosh and Lotus Development Corp.'s CC:Mail will be the first two local-area network E-mail products to get a gateway into HP's X.400 backbone. The server will also provide connectivity to Unix-based Simple Mail Transfer Protocol and pure X.400-based E-mail environments.

Available in January, the Worldport software for the HP 9000 will be priced from $8,000 to $24,000.

HP also announced last month an X.500 product integrated with its own Openmail software.

The HP X.500 Distributed Directory, which will also be deployed on the HP 9000 Series 800, will cost from $5,000 to $40,000.

ELLIS BOOKER

Inverse multiplexers filling wide-area networking gap

CONTINUED FROM PAGE 53

Corp. in Reston, Va.; and Teleos Communications, Inc. in Eatontown, N.J., simulates fractional T1 services with the added benefit that users pay for the long-distance portion of the data trip only when they are actually transmitting.

The influx of cost-saving applications such as videoconferencing, which consumes large amounts of bandwidth for finite periods of time, is driving this pay-as-you-go market, according to a recent study by The Yankee Group, a Boston consultancy and research firm. Applications such as backup, image and interconnecting local-area networks should push the market to $250 million by 1994, the firm predicted (see chart).

Affordable alternative

Willis Corroon Corp., an international insurance brokerage, said it could not have afforded a T1 videoconferencing link from its U.S. headquarters in New York to its Nashville site, despite plummeting video equipment costs.

When the firm looked at it, the cost of T1 lines between Nashville and New York was about $20,000 a month — "so far out of reach we couldn't even consider it," said Tom Farley, the firm's vice president of telecommunications.

Farley has been using a pair of Ascend devices (about $18,000 each) and a Harris Corp. videoconferencing system (about $44,000 at each end) since March. He will amortize the cost of the equipment over five years, and he pays monthly access charges for his local T1 line, which doubles as a voice transport. He said network use charges for each videoconference average about $60 an hour.

Another user, an operations manager at the telecommunications arm of a large food and drug chain, said that for his large-bandwidth video applications, "There aren't many alternatives. I only require six 56K lines, and I don't know anywhere in the country where there is fractional T1 in the local loop." His firm has been using Digital Access' equipment for six months to gain access to MCI Communications Corp.'s switched network.

A Minneapolis-based organization installed the Digital Access equipment for LAN-based medical imaging applications when it opened an Indianapolis office in April.

"A dedicated T1 line would have been $7,900 a month, and we don't need the full-time, real-time connections," said Scott Lucas, a consultant at the Center for Diagnostic Imaging.

Lucas said that by the time he would have added T1 multiplexer equipment and installation charges to the recurring, hefty dedicated-line fee, "If you put the spreadsheet to it, it doesn't take long to see that you'll save some money."

According to Lucas, the center is using the equipment to transport ad hoc images to the proper specialist's location for diagnosis so that "the patient doesn't have to know where the doctor is."

New act in town

The traditional T1 multiplexer vendors are also getting into the act.

Last week, Timeplex, Inc. said it will bundle inverse multiplexing capabilities into its equipment in January, allowing users to mix and match private and public networking schemes within one box.

In addition, competitor Newbridge Networks, Inc. has announced stand-alone products slated to ship in the same time frame that, like Timeplex's, support multiple applications on the user side. Yankee Group expects Ascend and Digital Access to also have multiple data-port models by mid-1992.

Inverse standards

As with any customer premises equipment, the issue of multivendor interoperability has reared its head in the inverse multiplexer market.

Compatibility standards are being addressed by two groups. One is an implementors' forum known as the Bandwidth On Demand Interoperability Group (Bonding), which 60% market leader Ascend joined this month.

Bonding was formed this fall, when Newbridge Networks, Inc. announced its intention to enter the inverse multiplexing market.

The Switched Digital Services Application Forum (SDSAF) — comprising carriers, application suppliers and equipment vendors — also includes an interoperability committee. SDSAF and Bonding have discussed sharing specifications, and Bonding may become incorporated into SDSAF.

JOANIE M. WEXLER

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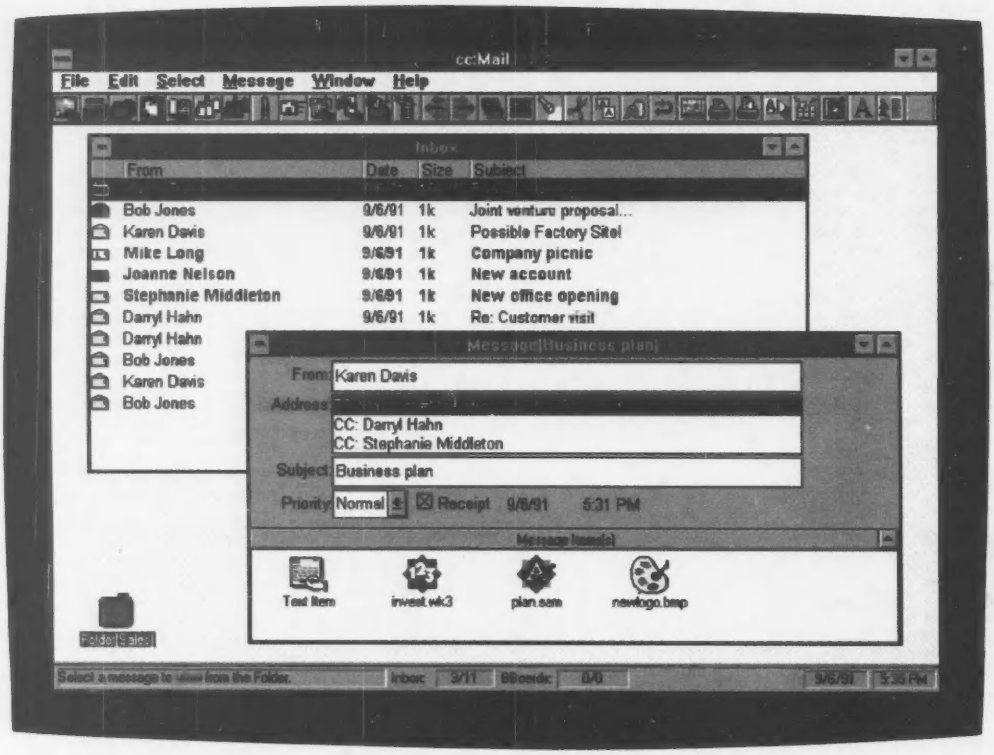

Over a million satisfied customers have already given cc:Mail a first-class rating. For example, Windows users love its easy-to-use interface, SmartIcons™ and application integration. And PC World *says "Sending a cc:Mail message is easier than addressing an envelope and licking a stamp."* 9/91*

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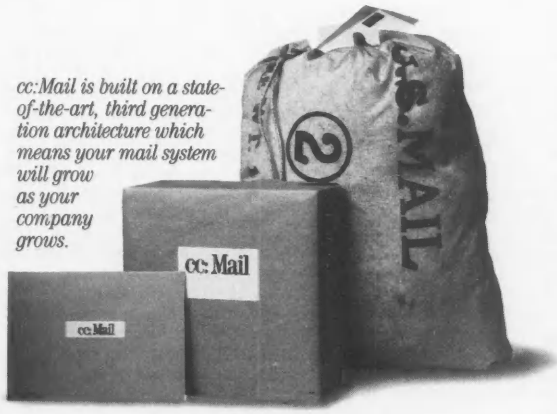
ding e-mail package?



cc:Mail is built on a state-of-the-art, third generation architecture which means your mail system will grow as your company grows.

It's easy to see why cc:Mail™ from Lotus® is the world's leading electronic mail package. Because it delivers more than messages. It handles just about any electronic mail need you might have. No matter how large or small your workgroup is. With it you can send text, files, graphics and faxes across all major local area networks such as Novell,® LAN Manager and Banyan.® Without needing new hardware.

cc:Mail

LAN TIMES READERS CHOICE 1990 1991

Better still, it's the only system that allows you to send electronic mail effortlessly back and forth from different platforms—such as DOS, Windows™ 3.0, OS/2® and Macintosh®—across the same LAN, without the need for gateways. Plus, with cc:Mail you can access public mail and even mainframe mail quickly and easily.

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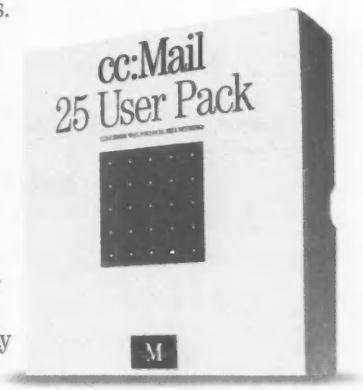
Keep things running on time with cc:Mail's advanced integrated calendaring and scheduling option.



For a free demo disk of the cc:Mail Macintosh, Windows or DOS Platform Pack of your choice, call us today at **1-800-448-2500.**

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FCC blasts AT&T for New York blowout

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — The Federal Communications Commission, in a scathing appraisal of lapses by AT&T in the Sept. 19 telephone network failure that grounded 85,000 air passengers, said the New York outage was caused in part by "dated" power alarm equipment "placed in functionally obsolete locations [and] in a state of general neglect and disrepair." That same situation exists with at least 31 other AT&T switching centers, according to the FCC.

In an 18-page report on the power failure at AT&T's Thomas Street facility in Manhattan, the FCC said, "Three levels of failure occurred at Thomas Street: failure of the power equipment, failure of the alarm systems and failure of management. That all three failures might recur at the same time at the same facility at some point in the future is unlikely.

"However, although AT&T has made establishing a 'self-healing' network its goal, facilities such as Thomas Street will continue to be subject to major, catastrophic failure," the report said.

The FCC said AT&T stoutly denied that cost-cutting measures were a contributing factor to the outage, the fourth major network failure in less than two years. But the commission said it was "less clear" about the possible effects of worker morale, and it cited "anecdotal reports" of understaffing and poor morale at the Thomas Street facility and other AT&T sites.

Backup system bombed

The massive telephone outage was triggered by a failure in AT&T's backup power system, which AT&T switched to as part of a power-saving agreement with Consolidated Edison. In making the switch, a power surge aided by an overly sensitive safety device disabled rectifiers, which convert AC power from diesel generators to the DC current used by telephone switches. As a result, power was drawn instead from emergency backup batteries.

Normally, such an event would have been easily corrected in the six-hour window provided by the batteries, but a series of management and technical lapses prevented automatic alarms from being detected by any of the more than 100 supervisors and technicians in the building that day.

> "ALTHOUGH AT&T HAS made establishing a 'self-healing' network its goal, facilities such as Thomas Street will continue to be subject to major, catastrophic failure."
>
> FCC REPORT

Some alarm lights did not work; some alarms were placed where they could not be seen or heard; alarm bells had been inactivated by AT&T personnel because they were subject to numerous false alarms; and visual inspections of the equipment normally performed after a cutover to backup power were not performed, in part because technicians were in a training course elsewhere.

The FCC did not fine AT&T, but it did direct the carrier to file a written statement saying whether it would continue to take service from electric utilities under power-saving agreements. It also directed AT&T to produce a comprehensive report on the status of power systems, alarm systems and emergency procedures at all AT&T offices and to produce an analysis of the vulnerability of AT&T's entire network to disruptions with steps it plans to take to avoid future outages.

In a written statement, AT&T said it would comply with all FCC requests. It said that most of the requested analyses had already been completed and that recommended actions were being implemented.

Rep. Edward J. Markey (D-Mass.), chairman of the House Subcommittee on Telecommunications and Finance, called the tough report and its demands an "about-face by the FCC," which has traditionally argued that marketplace pressures were sufficient to assure reliability of the telephone system. Markey said he is working on legislation "to ensure reliability is embedded in the network."

Painful results

According to the Federal Communications Commission review of the Thomas Street event in New York on Sept. 19, a "failure at three levels" of AT&T — in power equipment, alarm systems and management — led to the following:

- 4.5 million blocked domestic long-distance telephone calls.
- 500,000 interrupted international calls.
- Loss of 80% of the Federal Aviation Administration's telephone circuits.
- Cancellation or delay of 1,174 flights, affecting 85,000 airline passengers.

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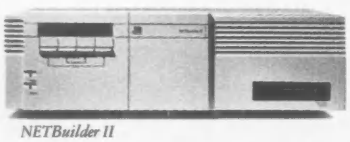

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Police use PC-to-mainframe links to keep track of evidence

ON SITE

BY JIM NASH
CW STAFF

A police officer's job is pretty unforgiving, whether on the street or in the data center. One overriding concern is keeping track of criminals, records and evidence on anything from frozen body parts to stuffed sharks.

Take the police departments in Denver, Santa Cruz, Calif., and Roseville, Calif. Each is using or has begun to implement microcomputer-to-mainframe architectures designed to cut errors, reduce officer work load and save shrinking funds.

All three departments are linking stand-alone personal computers and/or networked systems to mainframes using Bellevue, Wash.-based Attachmate Corp.'s Extra terminal-emulation and gateway software.

Denver Police Sgt. Tom O'Byrne was transferred in 1989 to the property section, where all confiscated items are stored until they are returned, destroyed or auctioned.

In 1988, the department had hired a consultant to build a PC-based system to track pieces of evidence numbering in the hundreds of thousands. Until that time, Denver had used a system of handwritten logs, inventories and reports documenting the ultimate outcome of each item.

Crated solution

The solution decided on was a bar-code system using a desktop computer and several handheld scanners. The consultant, however, left after installing only the code printers. The rest of the purchased hardware and software was still uncrated when O'Byrne arrived a year later.

Even though evidence was being labeled with bar codes, O'Byrne said, officers were still manually writing reports and entering 10-digit codes representing the goods. "That's where errors came in," he explained.

Type in one wrong number, and the property could disappear in a basement three-quarters the size of a football field and filled with guns, cash, narcotics, frozen body parts, stereos and — at one time — an impounded stuffed shark.

O'Byrne picked up the pieces having little or no experience with computers. "I just hacked it together, really," he said. What he hacked together in May 1990 includes three handheld bar-code scanners, a stationary model from Symbol Technologies, Inc. and a decoder from Bar Code Industries. O'Byrne said he used Attachmate's Now software to build screens and automate mainframe connections.

The scanners feed information to an AT&T 386SX PC that uses Attachmate's Extra Extended for DOS terminal emulation software. From there, the information is stored on one of several mainframes operated by the city of Denver.

O'Byrne said it used to take 20 hours to process 1,000 records before the system was set up; that time has been reduced to five minutes. He estimated that Denver saves $100,000 a year in increased productivity and input-error reduction.

In California, Patrolman Mike Menz has helped reduce response time, budgets and staff stress using microcomputer-to-mainframe communications for the Roseville and Santa Cruz police departments.

While working for Santa Cruz a few years ago, Menz helped design a system of Toshiba America Information Systems, Inc. laptops, PCs, Attachmate software and the county of Santa Cruz's IBM 3080 mainframes. The idea was to take dispatchers out of the vehicle registration and personal identification checking process.

After getting the ball rolling in Santa Cruz, Menz became a patrolman in Roseville but acts as a consultant for Santa Cruz. He said he is working on a similar project for Roseville. Both are still under way, Menz added.

Lola Crain, dispatcher supervisor for Santa Cruz, explained that on a busy summer night in the popular tourist town, as many as three dispatchers may be needed to handle police and citizen calls. A slow month such as October can generate 3,000 officer-initiated calls, half of which are license checks from police officers, she said.

Menz said those types of calls can be made directly by squad car and motorcycle officers using Toshiba portable PCs and radio-frequency modems to link up with county and state mainframes. Instead of the requests being called in to dispatchers who then type the information on terminals, officers send their requests directly to a 386 PC running Extra for Windows. That PC, in turn, opens a mainframe session, retrieves information and sends answers to the officers in the field.

Crain said when the system is fully functional next autumn, it will free dispatchers to take other, more urgent calls. "If nothing else, it means less stressful lives for our people," she explained. Menz said using Extra as the interface saved the county about $35,000 in software development time and hardware. He said similar projects to write interfaces to existing mainframe databases had been bid as high as $40,000, and this one came in at about $5,000.

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Horwitt

FROM PAGE 53

down approach to integrated management: They provide the framework for managing a wide variety of networking systems.

Unfortunately, it has taken vendors a long time to begin filling in their frameworks with the types of management applications users really need. Until very recently, the platforms could do little beyond collecting alerts from a variety of network devices.

To make matters worse, most vendors initially concentrated on linking their management systems to telecommunications devices. Very few businesses have bought the idea of using their host management platforms to monitor private branch exchanges and multiplexers. It is no wonder that few have sold — with the exception of Netview, which is still being used primarily to manage IBM Systems Network Architecture networks.

The third type of product, which began appearing a couple of years ago, is the standards-based network management offering. The idea is to get everybody to support the same definitions for basic network management functions — such as troubleshooting, security and configuration management — and load them into a system with a consistent, graphics-based user interface and database. Then users would be able to integrate whatever mix of network products they have under the same management umbrella.

The drawback to standards is how long it takes to define and implement them. The International Organization for Standardization has been working on an Open Systems Interconnect (OSI) network management standard for years and may be at it for years to come. More promising is the work of a vendor consortium called OSI Network Management Forum, which has released some standardized network management definitions. Unfortunately, implementation of those specifications is very slow.

To complicate the situation, a growing number of vendors are implementing Simple Network Management Protocol (SNMP), which was originally designed to manage Transmission Control Protocol/Internet Protocol networks but which has made quite a splash in the LAN interconnectivity sector. SNMP lacks OSI's functionality but has the advantage of being flexible, tailorable and usable right now. Most major vendors have announced SNMP-based products. The question is whether SNMP will eventually be superseded by OSI, making SNMP-based products obsolete.

To make matters more confusing, the Open Software Foundation (OSF) is promising Distributed Management Environment, a standard which may or may not be limited to the OSF's own distributed operating system.

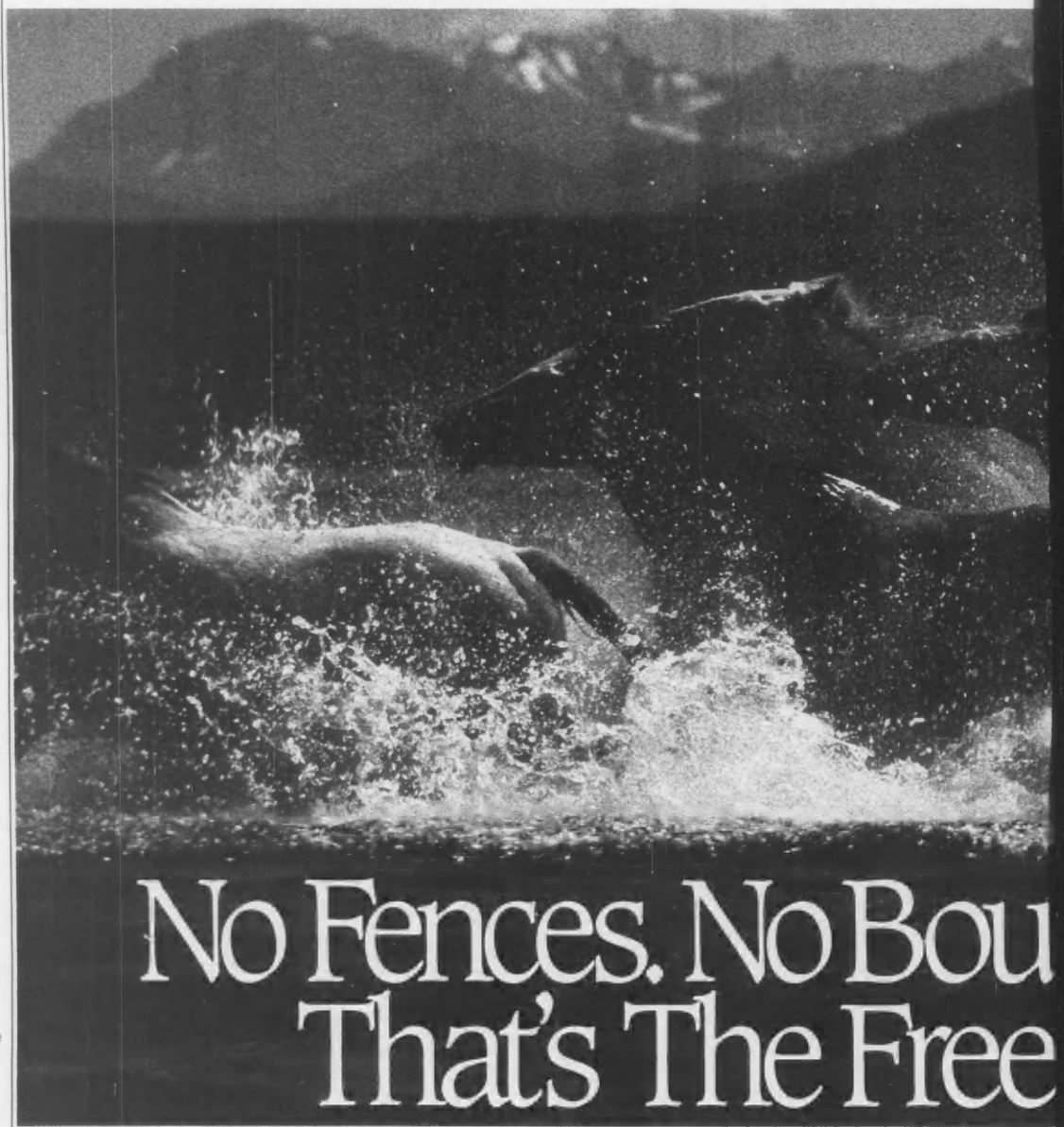
It is now clear that today's network management smorgasbord is a banquet of meringues and Perrier. It is not that we have too much rich food here; on the contrary, we have too little substance on the table.

Fortunately, some vendors are beginning to provide a happy medium. They are supporting standards as a way to link up with other, useful network management systems. And they are beginning to move off the "kitchen sink" style of integrated management to address key functional areas that are near to IS managers' hearts.

In particular, the host-based management vendors are finally moving beyond physical network management to areas that users desperately want addressed — such as the management of LAN servers and distributed applications.

For example, HP recently promised that Openview will troubleshoot its X.400-based electronic mail backbone. And the major host vendors are all bringing out ways to centrally manage distributed LAN-based applications and back up LAN systems. Wait a few more months, and you'll see even more meat on the board.

Horwitt is a *Computerworld* senior editor, networking.



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Passwords urged for Novell E-mail

BY JOANIE M. WEXLER
CW STAFF

Electronic-mail users who relay their messages through Novell, Inc.'s Nhub store-and-forward service are being advised by Novell and others to use passwords to prevent others from downloading their E-mail.

An industry observer said he discovered at a recent trade show that mail residing in Novell's Nhub host could easily be picked up by another company if no password were being used.

In response, Novell said it intends to contact Nhub administrators at subscribing companies to suggest they use passwords and to make them aware that, otherwise, anyone could go in and retrieve their data.

However, Novell said it has no plans at this time to make passwords a requirement for Nhub subscribers.

Nhub is a free message routing service that accompanies Novell's Message Handling System (MHS) back-end mail engine product on which E-mail applications sit. Users dial into Nhub to deliver and pick up mail traveling between sites that do not have dedicated E-mail links.

Eugene Lee, director of product planning at Beyond, Inc., an MHS applications developer and Nhub user in Cambridge, Mass., explained that without passwords, a firm could give its own MHS host the same name as another company's and pick up the Nhub messages stored for that company. While message store-and-forward services from the likes of Compuserve, Inc. require users to set up passwords on-line when they sign up for the service and are thus inherently more secure, "Nhub is a lot cheaper," Lee noted.

Used by over 1,100 subscribers, Nhub is intended as a "friendly courtesy service, which we try not to police," said Sara Radicati, product line manager for messaging at Novell. "If you buy a house and then choose not to put a lock on it, that's up to you," she said.

However, as passwords are Nhub options instead of requirements, they tend not to be used by most subscribers, said one industry observer, who described the setup as analogous to opening a checking account without requiring a signature. Radicati said Novell has no way of knowing how many Nhub accounts use passwords.

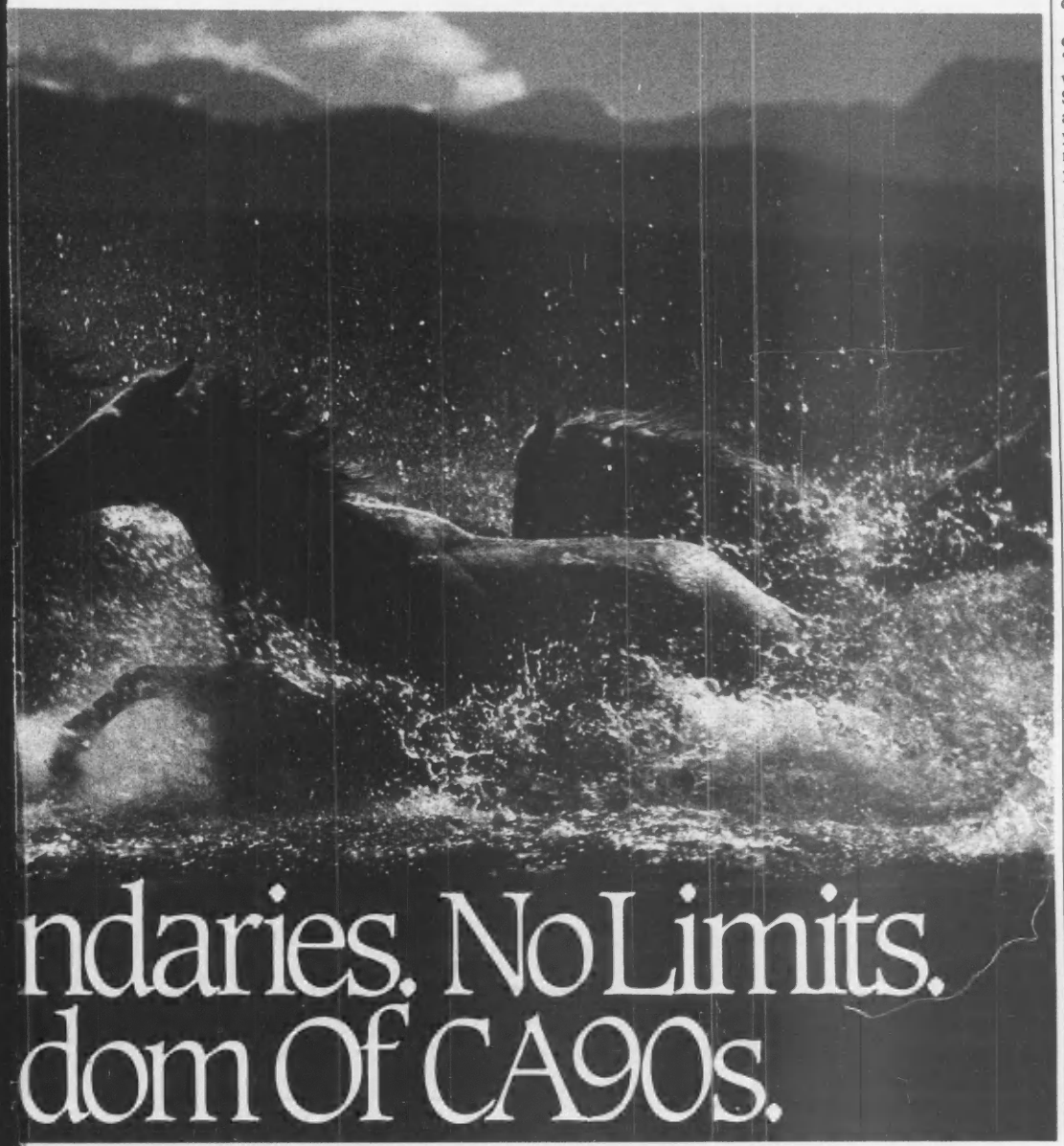
Once you have declared a password for an MHS hub, however, the system will thereafter require it and thus provide access protection, Radicati noted.

NETWORK SHORTS

AT&T extends switch service

Watch the waves in Hawaii with a videoconferencing link using **AT&T**'s Accunet Switched 56 service. AT&T has extended the switched service, which allows high-quality, on-demand digital data, between the U.S. and the Hawaiian Islands. A tariff filing for the service will be effective on Dec. 12, pending regulatory approval.

Buying its way into the U.S. trading-room market, **British Telecommunications PLC** has completed its acquisition of **FTT Alphameric**, the New York division of London-based Alphameric PLC, which sells an open systems software platform for trading rooms. Terms of the acquisition agreement were not disclosed.



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NEW PRODUCTS

Network management

Optical Data Systems, Inc. has introduced the Lanvision management product for Simple Network Management Protocol networks.

Lanvision attaches directly to Ethernet, Token Ring and Fiber Distributed Data Interface local-area networks without a bridging device. The product depicts information through graphics and network topology maps. It can also monitor Transmission Control Protocol/Internet Protocol hosts and provides security features. The product runs on personal computers and is priced at $3,100.

Optical Data Systems
1101 E. Arapaho Road
Richardson, Texas 75081
(214) 234-6400

International Telemanagement has announced an entry-level configuration option for its Maxm integrated network management product.

Maxm allows users to integrate non-Systems Network Architecture management systems into a single environment that can interface with IBM's Netview. The new configuration includes the 2-Way Netview Gateway, automation scripting capability and Expanded Memory Specification interface rule package that allows Maxm to interface with common network devices.

Pricing starts at $50,000.

International Telemanagement
Suite 400
1600 Spring Hill Road
Vienna, Va. 22182
(703) 761-0400

Network Monitoring, Inc. has announced the Snapprobe network management software tool.

Snapprobe collects and stores network performance data in a database and presents graphical and statistical displays. It supports in-band Simple Network Management Protocol. The product runs under Microsoft Corp.'s Windows and supports Dynamic Data Exchange for connection to other applications.

The product costs $1,995.

Network Monitoring
Suite 170
2041 Mission College Blvd.
Santa Clara, Calif. 95054
(408) 986-1166

Links

Systems Center, Inc. has added support for IBM's LU6.2 protocol to its Network Datamover (NDM) product line.

The NDM products automate data transfer for distributed applications. The company announced additional improvements, including a new release of NDM-MVS with enhanced I/O exit support.

Pricing for NDM starts at $22,500 on MVS systems. The IBM Application System/400 version starts at $1,000.

Systems Center
1800 Alexander Bell Drive
Reston, Va. 22091
(703) 264-8000

Gateways, bridges, routers

Computer Communications, Inc. has introduced the Interop/7020 TCP/IP-SNA Multiprotocol Router.

The router connects local-area networks running Transmission Control Protocol/Internet Protocol over a Systems Network Architecture (SNA) backbone. Companies can interconnect LANs over existing SNA lines rather than install additional dedicated lines. The unit appears as an information provider address to the LAN and as a PU2.1 device to the SNA network. Pricing ranges from $10,000 to $12,000, depending on configuration.

Computer Communications
2610 Columbia St.
Torrance, Calif. 90503
(213) 320-9101

Micro-to-host

Attachmate Corp. has begun shipping Extra for Windows 3.3.

The product runs under Microsoft Corp.'s Windows environment and connects personal computers to mainframe hosts. The upgrade includes access to Dynamic Data Exchange functions and diagnostic trace facilities. Extra for Windows 3.3 costs $425. Upgrades from previous DOS or Windows versions cost $75.

Attachmate
13231 S.E. 36th St.
Bellevue, Wash. 98006
(206) 644-4010

Systems Network Architecture

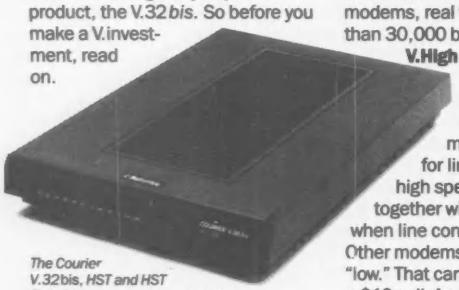
Future Soft Engineering, Inc. has announced Version 3.2 of Dynacomm/Elite, its Systems Network Architecture communications software for personal computers.

Dynacomm/Elite works under Microsoft Corp.'s Windows 3.0 and runs multiple terminal emulation sessions. The visual keyboard remapping function has been improved, the company said. The product also offers full High-Level Language Application Program Interface support. The product costs $495.

Future Soft Engineering
Suite 203
1001 S. Dairy Ashford
Houston, Texas 77077
(713) 496-9400

Avoid Modem V.Obsolescence

V.32 modems are now V.obsolete. That's right, just when you thought it was safe to standardize on V.32s, the CCITT officially approved the standard for a greatly improved product, the V.32*bis*. So before you make a V.investment, read on.



The Courier V.32bis, HST and HST Dual Standard modems are all available in internal, external and rackmount models.

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V.32*bis* is 14,400 bps full duplex. It's 50% faster than a V.32, and 6 times faster than 2400 bps modems. When you add CCITT-standard V.42*bis* data compression, as in our Courier Dual Standard™ and V.32*bis* modems, you get true 38,400 bps throughout. And that's V.whoosh. With regular V.32 modems, real throughput is less than 30,000 bps.

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MANAGER'S JOURNAL

EXECUTIVE TRACK

C. Raymond Kivley has been named director of corporate information systems at **Dakin, Inc.**, a toy maker in Brisbane, Calif.

Kivley, 36, is responsible for a $1 million systems conversion from a Unisys Corp. V380 mainframe to IBM's Application System/400 midrange processor. The conversion is expected to take 18 months.

Before joining Dakin, Kivley was director of IS at Capcom, a Santa Clara, Calif., distributor of Nintendo Co. products. He worked at Capcom for three years.

Kivley holds a master's degree in computer science and a bachelor's degree in engineering from California State University at Chico.

Robert C. Wynn was named IS department manager at **Reynolds Electrical & Engineering Co.**, a Las Vegas-based U.S. Department of Energy contractor for operations, management and construction at the Nevada nuclear weapons test site.

Wynn was previously a vice president and systems planning manager at Manufacturers Hanover Trust Co. in New York.

Before joining Manufacturers Hanover 18 years ago, Wynn worked in administrative and operations positions at the U.S. Department of Defense and the Federal Reserve Bank of New York.

He holds a bachelor's degree in economics and an MBA from Fordham University in New York.

Ralph E. Jones was elected 1992 president of the **Data Processing Management Association** (DPMA), based in Park Ridge, Ill.

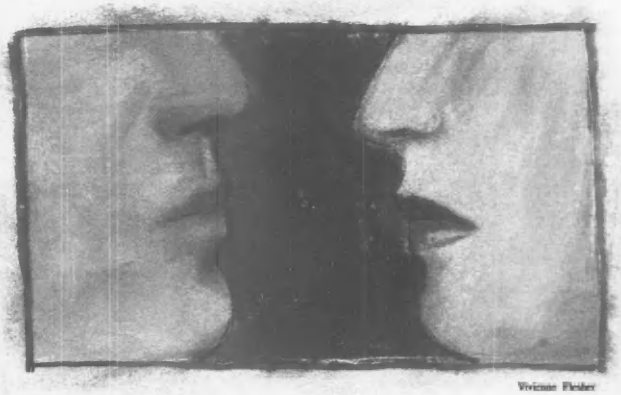
Jones is employed as the data processing manager at the Association of the U.S. Army in Arlington, Va. A DPMA member since 1971, Jones has been the association's executive vice president for the past year.

Jones was elected by the DPMA board of directors at the DPMA's annual conference, held earlier this month in New Orleans.

Harassment issue not burning in IS

Women viewed as largely unaffected by harassment, but activists urge policies be set

BY J. A. SAVAGE
CW STAFF



Vivienne Flesher

Professor Anita Hill and Supreme Court Justice Clarence Thomas' very public dispute over sexual harassment in the workplace apparently has not moved many information systems departments to implement new protections for women in the field, according to both male and female IS professionals.

Sexual harassment is not a major issue in the IS field, say managers contacted by *Computerworld*, because women in the profession are too savvy, smart and tough to put up with it. They defended their organizations as being "too advanced" to incubate harassment.

"Women in IS can't get ahead without being extremely knowledgeable and strong-willed," says Elva Bankins, president of the Network of Women in Computer Technology, a Philadelphia-based IS professional association. Speaking personally, and not for her group, she says harassment is not an issue in the profession because such women "tend to intimidate men, and IS women are adept at putting unwanted attention in its place."

An 'undignified' topic

Very few IS executives are willing to go on the record with their thoughts on harassment, with some claiming that it is "not dignified" or "too volatile and sensitive an issue" to discuss publicly. However, the "tough IS woman" theme appears repeatedly in interviews on the topic.

Edward Wisnewski, vice president at personnel placement firm Drake Beam Morin, Inc. in Walnut Creek, Calif., and former vice president of human relations at Bankamerica Corp., acknowledges that there is still "perhaps" a glass ceiling for women in IS. But "women in the systems area are more aggressive" than their counterparts in other areas, Wisnewski says, and thus are less likely to put up with sexual harassment.

That aggressiveness and reputation for working harder in the field, however, may be due to a subtle form of harassment, says one female IS director. "In IS it's not that obvious level of offensive remarks, it is a more subtle level of exclusion," she says. "Women are always made to feel like they are not one of the boys, so they compensate by becoming high performers."

Few have regulations

Most companies have corporatewide grievance procedures for employees, and some specifically address sexual harassment. Many departments, including IS, have definite policies for their particular conditions, but because harassment is not perceived as a problem, few IS shops appear to have regulations dealing with it. Even typically progressive areas, such as universities and liberal municipal governments, depend on their umbrella organizations'

Continued on page 66

Measuring the payoff from re-engineering

BY CLINTON WILDER
CW STAFF

Re-engineering business processes is supposed to be a little like one of those healthy snacks for children — good, and so good for you, too. As with any action that requires time and money, however, business executives want to know, in hard numbers, "How good is it?"

The payoff from re-engineering is indeed measurable and quantifiable, according to Greg Tucker, a principal at the San Francisco office of information systems consultancy CSC Index, Inc. Tucker and CSC Index have developed a methodology to measure benefits and have applied their formulas to about 15 CSC Index clients who have done re-engineering.

CSC Index takes before-and-after measurements of three aspects of the re-engineered business process: cost, time and number of defects. In service industries, defects are defined as the amount of "rework cycles" in the process, such as correcting errors on an insurance claim.

In successful re-engineering projects, all three measures improve together — challenging a basic business assumption that improving quality means increasing cost. "If you reduce the number of rework cycles, for example, cost, time and customer satisfaction all improve," Tucker said.

Re-engineering is not cheap or easy to undertake. Consulting firms with major re-engineering practices, such as CSC Index and Nolan, Norton & Co., are considered premier service providers, with fees to match. And re-engineering, by definition, means major change, which can be threatening and disruptive to an organization.

But the paybacks are usually worth it, Tucker said. "You see one-year and two-year paybacks on major projects, which is a fast return on investment," he said. The study of Index re-engineering clients found that fundamentally changing a business process produced an average improvement of 48% in cost, 80% in time and 60% in defects.

One health insurance company, for example, simply reduced the number of information fields on a dental claim form from 55 to 26. "The other 29 fields were for information that was not really required to make the claim decision," Tucker said.

The change made the process faster, reduced errors and cut processing costs at the same time. In that case, the insurance company recouped its CSC Index consulting fee and the cost of modifying the necessary software in less than one year.

Quantifying the benefits of such clients makes re-engineering "more of an experiential process rather than just an idea," Tucker said. "Executives want to know how much to invest in it, how much they will benefit and when. [The measurement process] takes a lot of the unknown out, and it becomes less of an adventure."

Harassment issue not burning, according to IS managers

CONTINUED FROM PAGE 65

rules and regulations — if any — to accommodate accusations of sexual harassment among IS personnel.

"We don't have any rules. They may have some in personnel," says Ken Phillips, director of IS for the city of Santa Monica, Calif. Phillips says his city is progressive enough that harassment has not been an issue. "We'd like to think that Santa Monica is not such a boys' club," he says.

Workplace equality activists say that even giving IS the benefit of the doubt, management should still have policies and regulations in place to guard against harassment.

"The first issue is making your work force understand what it is," says Kathryn Dickson, an Oakland, Calif., attorney who handles harassment cases. "A lot of people think there has to be touching or sleeping with the boss to get a job or a promotion. But sometimes, it's just joking within earshot of women or leering."

Understanding where that line is drawn in any particular situation may not be obvious to all, but it is the key to equal and fair treatment without harassment, activists say.

"I don't buy that crap that men can't compliment women anymore," says Barbara Otto, director of public affairs at 9to5, the National Association of Working Women in Cleveland. "Men and women need to renegotiate how to treat each other in the office."

Otto says men and women can tell when they are making someone uncomfortable. Body language is usually obvious, she says. Either a person tenses up or avoids that person's gaze. "Men should not feel they will be beset by bogus claims — and women should tell them to stop it," she says.

Both Dickson and Otto say that managers are first in the line of fire in harassment cases. Not only should managers take the initiative in defining and discouraging harassment, but managers often have the most to lose.

In California, for example, a company is considered automatically liable for a supervisor's behavior. Otto and others claim that most harassment cases involve an employee's direct supervisor.

Therefore, Otto recommends that supervisors assign the direct reporting of employee grievances to another higher manager or to another division, such as human resources.

Action plan for harassment

While talk about sexual harassment swirls through the workplace, Barbara Otto, public affairs director at 9to5, the National Association of Working Women in Cleveland, gives the following advice to managers for concrete action:

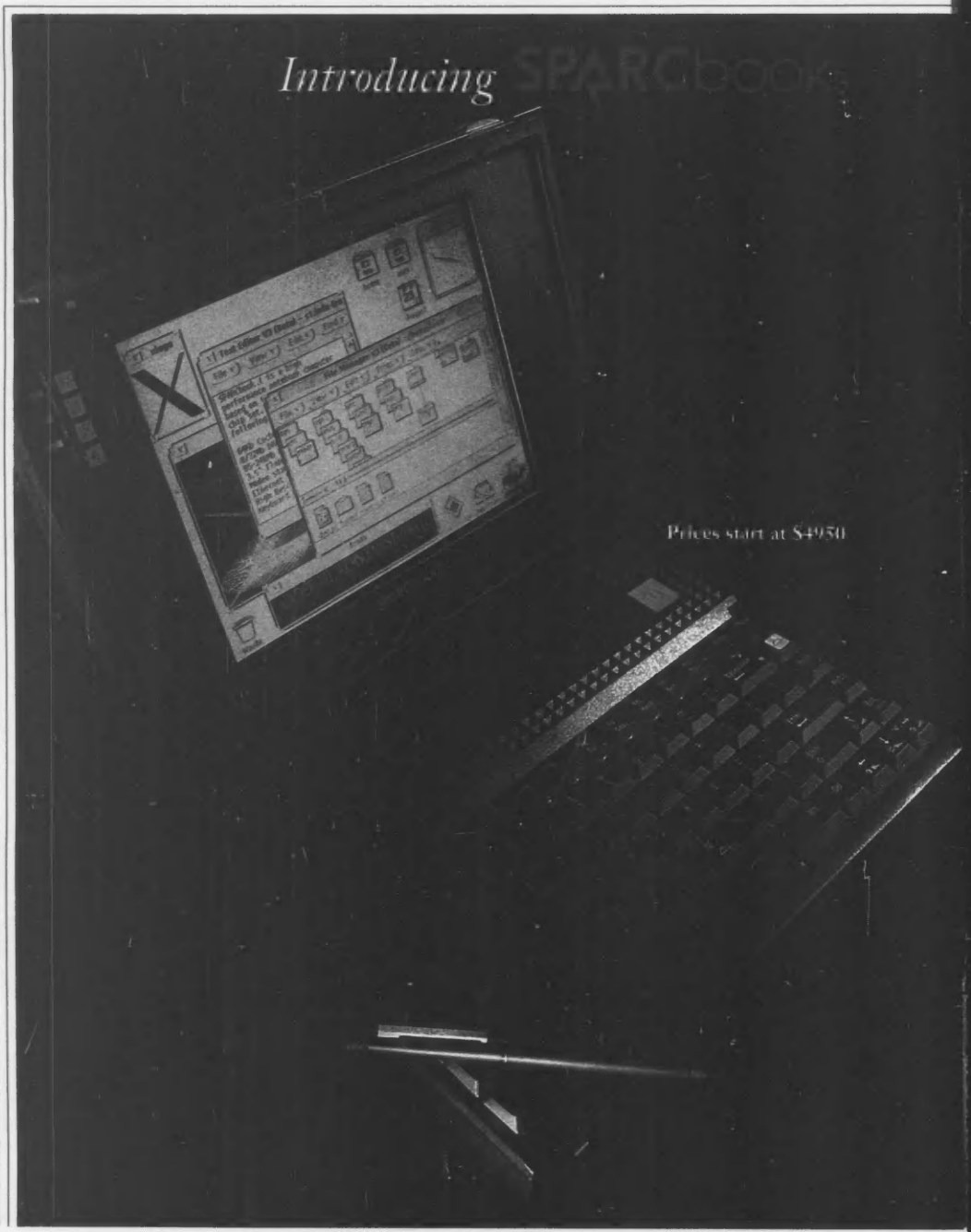
- Make clear what procedures employees should follow. Post policies in public places, like lunchrooms. Put relevant language in employee handbooks and in union contracts.
- Indicate what will happen to the harasser: suspension, demotion or firing.
- Create a procedure whereby employees do not have to report harassment complaints directly to supervisors. Designate a person in human resources or someone at the top of an organization.
- Institute training sessions in which employees participate in education and are not just "talked at." Otto rejects videotape training because employees "just go back to their cubicles and make fun of it."

In the meantime, Otto suggests that women (and men) not be afraid to speak up. "You don't have to scream. Just tell someone that a particular joke is offensive or certain repartee makes the workplace inhospitable," she says.

If offensive behavior continues, Otto proposes writing a memo regarding the behavior to the person. If it persists, she recommends keeping a daily journal of the action, the date and any emotional response. Keep copies of such a journal and keep copies of job performance evaluations. "See if anyone else witnesses the behavior, and find out if they will back you up," she says. Find out if others have been the target of such conduct.

"If the structure is against you — say the president of the company is harassing you — go outside the workplace to the Equal Employment Opportunity Commission or to state law," Otto suggests. But she admits that state and federal laws have little enforcement power.

J. A. SAVAGE



CALENDAR

DEC. 8-15

Document Image Automation. Washington, D.C., Dec. 9-11 — Contact: Meckler Conference Management, Westport, Conn. (203) 226-6967.

Netcom '91. Washington, D.C., Dec. 9-12 — Contact: Technology Transfer Institute, Santa Monica, Calif. (213) 394-8305.

Computer Measurement Group (CMG) International Conference. Nashville, Dec. 9-13 — Contact: CMG, Chicago, Ill. (312) 527-6652.

PC Windows Exposition and Conference. San Francisco, Dec. 10-11 — Contact: PC Windows Exposition and Conference, Framingham, Mass. (508) 879-6700.

The Electronic Data Interchange Association (EDIA)'s 23rd Annual EDI Users Conference & Exhibit. San Diego, Dec. 10-12 — Contact: EDIA, Alexandria, Va. (703) 838-8042.

Software Quality Management. Chicago, Dec. 10-12 — Contact: Technology Transfer Institute, Santa Monica, Calif. (213) 394-8305.

Dexpo Fall '91. Anaheim, Calif., Dec. 11 — Contact: Miller Freeman Expositions, Boston, Mass. (617) 232-3976.

Flat Information Displays Conference and Exhibition. Santa Clara, Calif., Dec. 11-12 — Contact: Murray Disman, Information Associates, Inc., Menlo Park, Calif. (415) 322-0247.

Excellence Through Performance. Orlando, Fla., Dec. 11-13 — Contact: Barnett Data Systems, Rockville, Md. (301) 762-1288.

Cordless '91. San Francisco, Dec. 12-13 — Contact: Telestrategies, Inc., McLean, Va. (703) 734-7050.

Simulation Conference. Arlington, Va., Dec. 12-16 — Contact: Herb Schwetman, Austin, Texas (512) 338-3428.

Mid-Atlantic Focus Users Group Meeting. Philadelphia, Dec. 13 — Contact: Joel Haness, General Electric Co., Moorestown, N.J. (609) 722-3687.

JAN. 12-18

Pacific Telecommunications Conference. Honolulu, Jan. 12-15 — Contact: Pacific Telecommunications Council, Honolulu, Hawaii (808) 941-3789.

The 14th Annual ATE & Instrumentation Conference. Anaheim, Calif., Jan. 13-16 — Contact: Miller Freeman Expositions, Boston, Mass. (617) 232-3976.

Amiexpo. Long Beach, Calif., Jan. 14-16 — Contact: Amiexpo, Valhalla, N.Y. (914) 741-6500.

Scientific and Engineering Applications of the Macintosh. San Francisco, Jan. 15-17 — Contact: Macscitech, Worcester, Mass. (508) 755-5242.

JAN. 19-25

American Business Press. Boston, Jan. 19-23 — Contact: American Business Press, New York, N.Y. (212) 661-6360.

Uniforum '92. San Francisco, Jan. 22-24 — Contact: Bob Linke, Professional Exposition Management Co., Carol Stream, Ill. (708) 260-9700.

Nextworld Expo '92. San Francisco, Jan. 22-24 — Contact: Jeannine Barnard, World Expo Corp., Framingham, Mass. (508) 879-6700.

JAN. 26-FEB. 1

The AS/400 Help Systems Operations Automation User Conference. Orlando, Fla., Jan. 27-30 — Contact: Help Systems, Inc., Minnetonka, Minn. (612) 933-0609.

Improving Productivity in Systems Development. Phoenix, Jan. 27-31 — Contact: Applied Computer Research, Inc., Phoenix, Ariz. (602) 995-5929.

Comnet '92. Washington, D.C., Jan. 27-31 — Contact: Rachel Winett, World Expo Corp., Framingham, Mass. (508) 879-6700.

8th Annual Computer Graphics Show. New York, Jan. 28-30 — Contact: David J. Small, MIJO, Inc., Silver Spring, Md. (301) 587-4545.

FEB. 2-8

Information Management Conference. New York, Feb. 4-5 — Contact: The Conference Board Registrar, New York, N.Y. (212) 339-0290.

FEB. 9-15

Computer Graphics '92. Walt Disney World, Orlando, Fla., Feb. 10-12 — Contact: Sheila A. McDonald, Frost & Sullivan, Inc., New York, N.Y. (212) 233-1080.

Networld '92. Boston, Feb. 11-13 — Contact: Annie Z. Scully, Bruno Blenheim Associates, Englewood Cliffs, N.J. (201) 596-8542.

Dexpo. Calgary, Alberta, Feb. 11-13 — Contact: Miller Freeman Expositions, Boston, Mass. (617) 232-3976.

FEB. 16-22

Information Security Managers Symposium. San Diego, Feb. 18-20 — Contact: Pamela Bissett, MIS Training Institute, Framingham, Mass. (508) 879-7999.

Seybold Seminars '92. Boston, Feb. 18-21 — Contact: Beth Sadler, Seybold Seminars, Malibu, Calif. (213) 457-5850.

FEB. 23-29

Software Development Spring '92. Santa Clara, Calif., Feb. 23-28 — Contact: Miller Freeman Publications, Inc., Santa Clara, Calif. (415) 905-2414.

Synoptics Users Group Conference. San Francisco, Feb. 24-26 — Contact: Amparo Lago, Synoptics Users Group, Santa Clara, Calif. (408) 988-2400.

Macapp Conference. Orlando, Fla., Feb. 24-28 — Contact: Macapp Developers Association, Everett, Wash. (206) 252-6946.

MARCH 1-7

Share '92. Anaheim, Calif., March 1-6 — Contact: Pam Schur, Share headquarters, Chicago, Ill. (312) 822-0932.

Unix & Open Systems. Toronto, March 4-5 — Contact: Kal Juman, Datapro/Canada, North York, Ontario. (416) 496-3131.

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Mainframes

There are deals galore these days, and some of them are actually good ones. But be sure to read the fine print without rose-colored glasses

BY SUSAN GANNON

Consumer confidence is at nearly a 10-year low, the nation is looking at a double-dip recession, and at this point, most manufacturers — especially those that make mainframes — will do almost anything to make a sale.

The numbers themselves tell the story: Mainframe growth actually declined by 4.7% in the 1990-1991 time frame, according to International Data Corp., a market research firm in Framingham, Mass. Although the rash of recent announcements is expected to fuel sales in the next year, growth forecasts are in the single digits.

As a result, customers are now asking for — and getting — discounts that were unheard of five years ago. Discounts on the latest technology from the large systems players are running as high as 40%, according to recent data.

If you have the money to spend, this certainly seems like a prime time to buy. And it is, as long as you exercise some caution. The most important thing to keep in mind is that vendors are ready to promise almost anything to retain customers right now.

Promises, promises

All of the vendors — but especially IBM and the plug-compatible manufacturers (PCM) — are jockeying to be the first to ship the greatest technological advances, some that you may not really need and some that may take a while to deliver.

Before venturing out into this potential land of opportunity, then, it's important to know not only where vendors are willing to negotiate but also what your needs are and which paths only lead to trouble.

Gannon is a senior research analyst, high-end systems, at Technology Investment Strategies Corp. in Framingham, Mass.

Discounts aren't all you can expect mainframe companies to dangle in front of you to win your business and continued loyalty. Other offerings include the following:

- Extended maintenance contracts.
- Free educational programs.
- Waived initial software licensing costs.

Such incentives can mean great cost savings for shrewd customers that negotiate for them. Some common deals that have been cut include free maintenance for two years or longer, extra disk drives thrown in and steep discounting on additional memory increments. Some customers have even gotten the vendor to pay for their transportation and packaging costs for a move to a new data center.

If a situation is especially competitive, IBM and the PCMs have also been known to provide an interim "placeholder" machine at no cost. In essence, this means you'll receive an older technology machine for free that will either be swapped or upgraded when the new technology you are really interested in becomes available.

Robert Neubecker

Amdahl Corp. has been known to offer such placeholder machines, especially to win contracts for its latest model, the 8650M.

The appeal of this yet-to-be-shipped machine is the over 300 million instructions per second (MIPS) performance it promises. Not only is it the fastest of the 390-class processors announced, but it is also the first announced eight-way processor, and it has moved Amdahl to the front of the aggressive game of performance leapfrog it plays with IBM and Hitachi Data Systems Corp.

IBM worked a deal with its Enterprise System/9000 line, offering a first line of machines based on older technology; the machines were ultimately upgradable to its second line. Customers essentially purchased stepping-stone machines, and IBM didn't have to wait to make the sale.

Taken at face value, this placeholder deal looks pretty good. But there are a number of ways it can sour. For one, the product could be delayed. The purchaser is then locked into a game of wait-and-see.

In some cases, customers who've locked into an upgrade are the last to receive the new technology. That's because the machine upgrades usually ship after the outright box does. So, anyone who purchased a placeholder for IBM's ES/9021-820, for instance, will get his upgrade in fourth-quarter 1991, while customers that just ordered the 820 outright are already receiving theirs.

Wait-and-see could even turn into wait-and-lose. The new machine may never materialize in the hoped-for form — or at all, in some cases. For instance, there are many rumors surrounding Amdahl's 8650M running MVS/ESA as a single image; this is the typical mudslinging campaign that takes place in a competitive environment, and the rumors won't be dispelled until the machine ships.

Another strategy that all the vendors — PCMs and non-PCMs alike — are pushing very hard right now is easy upward migration. In the past, migration has essentially meant pushing out the old box and wheeling in the new, a big economic loss for the customer.

Vendors are attempting to

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Let's Make a Deal
How to choose and purchase a mainframe in the '90s. Page 74.

Buyers' Scorecard
Amdahl comes out on top in user product ratings. Page 78.

Product Listing
A comprehensive listing of late-model mainframes. Page 80.

Discounts galore but read fine print

CONTINUED FROM PAGE 71

change all that; you still have to swap boxes to reach a new technology platform, but now you're given a financial incentive to do so, whether through trade-ins, deferred payments or other methods.

Amdahl has been the most creative with its migration strategies, tailoring each migration to customers' specific needs. If you want to keep the old serial number for tax purposes, Amdahl works to make that happen.

IBM, on the other hand, has a new twist that allows existing 3090 customers to trade in qualified 3090 processors as credit toward the next platform.

These financial upgrades work well both for vendor and purchaser. It's just important to understand the bottom line: The vendor wants you to buy into its next technology platform.

It is certainly helpful for any vendor to offer migration services, but there's still a problem with many of the newly announced machines — quite a few of the most interesting features and functions are not even available in their complete form and are therefore impossible to analyze on a cost/benefit basis.

That doesn't stop vendors from trying to sell them, of course. What they would like you to do is pay now in order to save later. But without a bottom-line assessment of how these new technologies are going to either increase productivity or save money, it's difficult to justify that kind of expenditure.

A case in point are two new features — Escon and Systems Complex, or Sysplex— originally announced by IBM and followed up quickly by Amdahl, HDS and, in the case of Escon, Bull.

Escon uses fiber-optic technology to send data across I/O channels. Fiber optics enable faster channel speeds between peripherals and the host — up to 17M byte/sec., a great improvement over the 4.5M byte/sec. speeds of two years ago. They also increase the distance peripherals can be placed from the host to 9 km.

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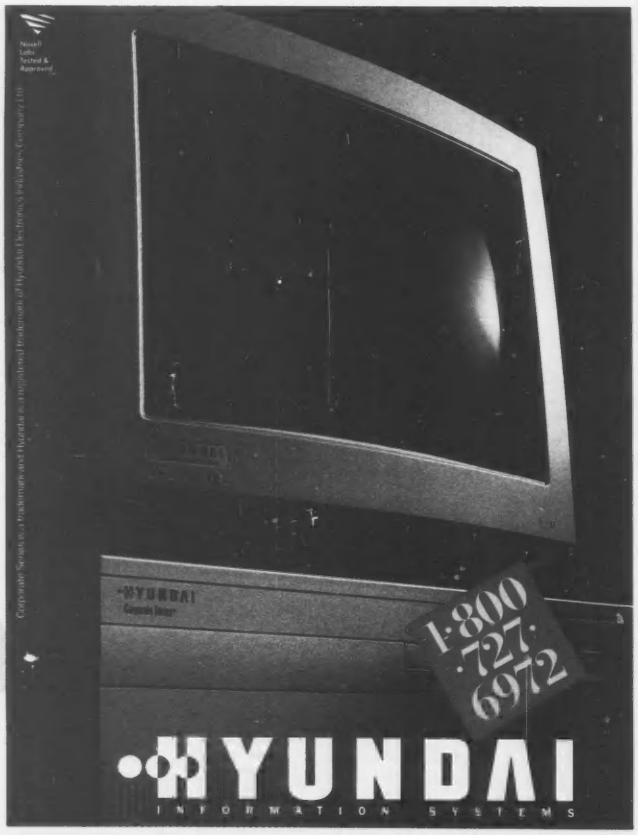

Suiting up to serve

BY JODIE NAZE

To keep up with changing times, many mainframe vendors are casting their machines as servers on a local-area network. While users are putting mainframes on LANs, the machines are mostly doing rudimentary tasks such as file storing, print serving and backup services.

"Everyone is trying to use the mainframe as a server, but only about 25% to 30% are doing so, and [they] are limited in what they can do," says Frank Dzubeck, president of Communications Network Architects, Inc. in Washington, D.C.

Mainframe vendors have started to respond to the user demand, Dzubeck says, "but they're just starting to get the pieces that allow this type of functionality."

Some of the biggest problem areas are the following:

- A limited number of Ethernet and Token Ring ports. "Many mainframes are limited to just a few Ethernet ports, whereas products like Netframe can have eight or potentially more ports," says Ron Peri, president of Computer Support of North America, Inc. in Basking Ridge, N.J.
- Lack of LAN operating system compatibility. Novell, Inc. Netware and Microsoft Corp. LAN Manager do not run natively on every mainframe.

"The performance of products like Portable Netware and Netware for VMS have not matched the performance of Netware 386," Peri says. "If and when we see native ports of network operating systems like Novell Netware to the mainframe — and if mainframe prices continue to come down — mainframes can become good servers."

- Inability to speak the same transport language. IBM mainframes are difficult to use as servers because they use Systems Network Architecture, while users on a LAN would want to use LAN protocols. But Digital Equipment Corp.'s VAX can act as a peer system on a LAN-based client/server network.

Some people say the mainframe will assume a role on the LAN but not as a full-fledged server. For instance, it may act as the middleman between the user and data stored on large disk drives, says Larry Abbott, a senior group editor for large and midrange systems at Faulkner Information Services, Inc. in Pennsauken, N.J.

"There will probably never come a day when mainframes will sit on LANs as servers in the same way that midrange servers do today," he says. "They are simply too powerful and costly."

Naze is a *Computerworld* researcher, features.

The thought of achieving faster channel speeds and the ability to move data centers farther apart may bring a smile to your face, but there are some substantial reasons to wait before leaping into Escon.

One reason is cost. Vendors will negotiate on price, but this is still a very expensive technology, requiring a total revamp of the data center. Another reason is that few of your peripherals can exploit Escon technology.

Sysplex is one of IBM's favorites in its latest round of announcements, but a lot of customers are still trying to decipher exactly what it is. A Sysplex — recently introduced into MVS/ESA — is a group of IBM 370/390 systems that are physically connected and use new intersystem software services to communicate and cooperate with one another.

As with Escon, the most important aspect of Sysplex is not the services it provides now but that it is the base on which future coupled-systems capabilities will be developed.

Mainframe purchasing methods differ. Of 163 users surveyed, the following holds true:

39% purchase their systems.

30% rent or lease from the manufacturer.

26% rent or lease from a third party.

In the next three to five years, Sysplex will be the umbrella for IBM's delivery of mainframe-based fault tolerance, large-scale multiprocessing and parallel computing. The aim is to make Sysplex look less like a group of loosely coupled systems and more like a large, single-image system.

For customers with very large databases, Sysplex will be a welcome improvement to today's data-sharing mechanisms, when all its facets are available. But for the rest of the installed base, Sysplex will be of limited utility.

Not every new feature offering is so foggy. On all machines, MIPS levels are higher than ever before; although there are plenty of the traditional pronouncements in this area, you can get as high as 236 MIPS on a six-way processor right now via IBM. Even the non-PCM vendors have caught up to the performance levels of the IBM crowd.

Fiber optics

Even without Escon, you can get fiber-optic channels on both Tandem Computers, Inc.'s Cyclone mainframes and HDS' EX line. The Cyclone line can link up to 16 processors via the fiber-optic-based Dynabus. This allows sections of a Cyclone system to be placed up to 50 meters apart, offering a lot of flexibility in data center configurations.

Tandem also offers fault tolerance through its Guardian operating system. The financial industry in particular has found this to be a valuable feature, and in fact, the majority of that industry uses Tandem machines. This success has prompted more mainframe players to tout the fault-tolerant abilities of their processors, although this is mostly positioning.

The challenge for Tandem and the other non-PCMs is to attract new customers within their installed base. Because of the high cost associated with migrating to another proprietary platform, most customers are hesitant to move. Unless these vendors migrate customers' applications for a song, this issue will continue to be a bane for new customers.

Users would like the following functions added to their mainframes, according to 163 users surveyed for Buyers' Scorecard:

1. Improved networking.
2. Better upgradability.
3. Added cooling.

Bull and Unisys Corp. are other vendors that have to break the proprietary stereotype, although both have made some moves toward their eventual goal of "enterprisewide connectivity."

The non-PCMs in particular are (but all vendors eventually will be) under a lot of pressure to prove not only their performance prowess but also their ability to function with the rest of the enterprise. Already, Bull, Unisys, Digital Equipment Corp., IBM, HDS, Amdahl and now Tandem are voicing the magic words "open systems" and trying to reposition themselves as "integrators" within a networked computing environment.

However, much of this is still a long way off. For now, it's enough to keep up with the most recent round of new product introductions and to decipher whether these products are necessary or just hype.

The most important decisions to make today are whether the cost of the new features and functions will mean increased productivity or cost savings for your enterprise. In this competitive mainframe environment, the primary beneficiary *can* be the consumer, if you're careful. •

Machines to watch

Last year, most of the major mainframe vendors announced new-generation platforms, promising higher performance and a wealth of new functions and features. Whether the functionality is ever delivered will be another story. But it's still a good idea to keep an eye on the cutting edge.

▸IBM
Enterprise System/9021-900
List price: $22,568,000
MIPS: 236.3
• Offers a 20% price/performance improvement over the 3090-600J, IBM's previous high-end machine for enterprisewide business computing.
• High hopes for Escon and Sysplex (although currently unavailable), which are expected to give customers high-performing computer complexes that communicate with multiple sites through high-speed lines.

▸Amdahl Corp.
5995-8650M
List price: $30,089,000
MIPS: 311
• Only machine announced with an (as yet unavailable) eight-way processor. Doubles processing power of Amdahl's previous machines.
• Through the Enhanced Performance Feature, customers can pay to receive 10% to 15% more performance on their processor. This pushes Amdahl to the front in the performance race.
• Expected to offer Escon and Sysplex.

▸Hitachi Data Systems Corp.
EX620
List price: $20,485,000
MIPS: 211.7
• First announcement of a six-way processor.
• The company's first machine to offer 100 MIPS and above.
• Can be configured with HDS' optical channels, which support the existing parallel protocol and convert to Escon at a later time.

▸Unisys Corp.
2294A4 (2200/900 series)
List price: $16,585,000
MIPS: 160
• Offers 2½ times the performance of the 2200/600 line, giving Unisys customers performance comparable to IBM and plug-compatible manufacturers.
• Initial orders have exceeded $150 million.
• 2200 Extended Processing Architecture (2200/XPA) removes virtual memory constraints, which promises to increase memory capacity by up to 2G bytes.

▸Digital Equipment Corp.
90001-440
List price: $4,268,000
MIPS: 166
• VAX compatibility for installed base.
• Server models lower entry point to this line and make price/performance very competitive with rest of industry.
• Aimed at large commercial sites as well as scientific/engineering users.

▸Bull HN Information Systems, Inc.
DPS-9000/92
List price: $9,370,000
MIPS: Not available
• Eighth high-end mainframe in Bull line.
• Intended to help customers move to distributed computing environment.
• System-level caches provide high-speed storage between main memory and the processor.
• Lower cost of entry into this line.

MIPS are based on information supplied by the vendor.

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How to get right machine at right price

BY SUSAN GANNON

Purchasing techniques vary, but these rules of thumb usually apply across the board.

✔ Before deciding which level of mainframe to purchase, determine your company's growth requirements. Ten percent annual growth in million instructions per second (MIPS) would place your company toward the low end of a vendor's product line; anything more aggressive would point you toward the middle to high end.

MIPS growth can also determine your range of alternatives. If you require a machine with 100 MIPS or lower, your search can include the used market. However, there are fewer options at 300 MIPS and above.

✔ Question user requests for the latest technology innovation. Find out if they really need the latest functionality or if they are just trying to keep up with the competition. Very often, it's better to be left behind in the technology curve than to pay premium prices for the latest equipment.

✔ Consider older platforms. When a vendor announces a new product line, it will often retrofit some of the new functionality to the replaced machines. Chances are you could purchase such a machine either used or at a significant discount.

✔ Prepare yourself to negotiate price. Research the latest discount rates and used prices for a comparable machine. Keep informed of recent acquisitions in your industry and the pricing — this is valuable ammunition.

✔ Once you've determined the exact amount of processing power you need, the machines that will deliver the desired performance and the price you are willing to pay, call in the vendors or third-party players. It's time to start haggling.

IF YOU DON'T like the first bid offered, don't take it. Large-systems players will be willing to renegotiate if it means another chance at winning the deal.

✔ Even if you have a long-standing relationship with a vendor, don't be afraid to call in the competition for a visit. In today's pressure-cooker environment, any threat of losing an account is taken seriously. Use it to your advantage.

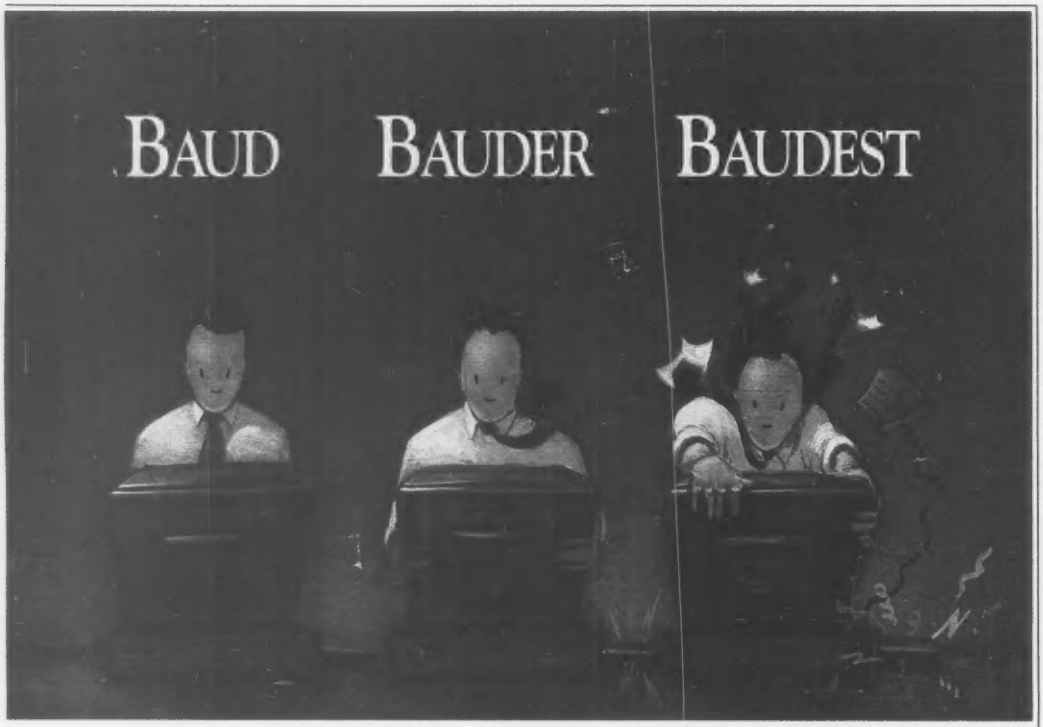
✔ If you don't like the first bid that's offered, don't take it. In most instances, large-systems players will be willing to renegotiate. Everyone will come back to the bargaining table if it means another chance at winning the deal.

✔ Push for soft-dollar savings when purchasing new equipment. Ask for extended warranties or free educational services, especially if the vendor is drawing a hard line of hardware discounts. These savings still provide relief to the bottom line, and that is the goal.

✔ Do not believe anyone who tells you that "no one is receiving that type of discount." Five years ago, significant discounts were unheard of; today, they are the norm.

✔ Try to avoid locking in with one vendor. Do not negotiate deals that obligate you to purchase future upgrades, even if it means discounted MIPS. If the deal sounds too good to be true, it probably is.

✔ Another word of caution: Do not overbuy MIPS today in order to satisfy expected growth in five years. It is much safer to buy MIPS incrementally. •



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Ten reasons to stand by your mainframe

There's a lot of talk about offloading applications from the mainframe to smaller platforms. But there are also plenty of mainframe diehards around — perhaps even enough to make up a majority of information systems folk. In a recent survey of 163 mainframe users conducted for Buyers' Scorecard (see page 78), 84% said their need for mainframes has in no way decreased because of applications downsizing, with only 15% answering to the contrary.

Computerworld *asked Richard Lewis, director of IS at All-Phase Electric Supply Co. in Benton Harbor, Mich., to list his reasons for sticking with the mainframe through thick and thin. Here's what he has to say on the matter.*

.....

Kevin Horan

All-Phase's Lewis *says, 'We currently support the IS function with 1% of our sales dollars — a great testimony to the proficiency of our mainframe'*

To hear the industry hue and cry, centralized processing — with a mainframe at the heart of it — is dead.

That's anything but true at our company, a $500 million nationwide electrical wholesaling distribution business. For us, a mainframe is the only platform we would trust to run nearly all our mission-critical applications. In fact, I can count at least 10 reasons why we'd absolutely, positively settle for nothing less:

1 We need to handle massive transaction volumes. To say that our business is "computer-intensive" is a wild understatement. Our Unisys Corp. A17 provides on-line data processing for 100% of our sales transactions — which average 20,000 per hour or six every second — as well as our materials management, receivables, payables, payroll and electronic mail. The price for an equivalent amount of CPU power, memory and disk storage in a distributed environment of personal computers or workstations would be prohibitive.

2 We want to shield users from system issues. We have 1,350 terminals at 108 locations in the warehouse-branch locations in 20 states, which means that about three out of every four of our 1,800 employees access the mainframe. Because each terminal transmits one transaction every four minutes, it's clear that these users do not have time to deal with the systems administration chores that would be necessitated by even the smallest distributed unit.

3 The mainframe keeps our IS costs down. According to a recent study by Arthur Andersen & Co., the trend in the distribution industry is for IS to claim 2.5% or more of gross sales dollars. We currently support the IS function with 1% of our sales dollars — a great testimony to the proficiency of our mainframe.

4 We need to ensure that data is timely, secure and accessible. Because it offers a single repository, a host system consolidates and protects data, allows it to be updated in an orderly fashion and makes it easy for authorized users to access. To get the same kind of data integrity and accessibility in a distributed environment, we'd need complex and resource-intensive software and communications facilities.

5 We feel we can attract a more highly professional IS staff. Mainframe environments consistently attract very committed IS professionals — career-oriented managers, analysts, programmers and operators — who are capable of delivering the most productive and applicable systems targeted to solve specific business issues. These people are company employees first and IS technicians second.

6 The mainframe helps us keep pace with users' applications needs. Centralized host environments have long taken heavy criticism for applications backlogs. While we've felt that way in the past, this is fast becoming a nonissue as we evolve to host-based computer-aided software engineering tools and fourth-generation languages (4GL).

7 Custom application development is easier on the mainframe. In our competitive industry, we cannot restrict ourselves to the same "canned processes" used by our competitors. A case in point is our Preferred Customer Award Program, which — much like a frequent-flyer program — allows customers to amass points over a period of time and qualify for a variety of awards.

There was no generic software available to support this application, and we couldn't wait for an independent software house to develop it. With our pool of skilled programmers, we were able to implement a good idea from our marketing department ahead of our competition.

In a distributed processing environment of PCs or workstations, there is a strong temptation to settle for off-the-shelf software, which may not really address some of your company's most pressing business needs. In addition, the generation of unique, custom applications is not easily facilitated.

8 We want to preserve and leverage our systems investment. Our IS department opened shop with its first mainframe in 1983, and since then, we have developed a wealth of applications code. Moving to a distributed systems architecture would mean rewriting or possibly jettisoning major portions of that code.

We can keep our applications investment intact in our host environment through reverse engineering. It is a relatively simple matter to run our third-generation applications code through a machine filter, which prepares it for migration into a 4GL environment.

We're also able to integrate new technologies into our existing host-based environment. Systems in the works include voice processing applications and a document image management system.

9 We are assured of vendor support in upward migrations. Mainframe vendors generally have an outstanding record of helping customers migrate applications to new hardware platforms.

It's easy to see why: By selling a multimillion-dollar system, a mainframe vendor can afford to invest in the conversion processes and technical support personnel that will allow its user base to make the transition.

In contrast, vendors of lower priced desktop and distributed systems and applications are more likely to put the burden of migration onto the user.

10 We hold a lot of clout with our systems vendor. As a large systems user, we definitely have more influence with our vendor than most users of PCs and distributed systems do. We can more readily effect the changes we need and get an improved level of support. Few vendors of distributed systems can afford to make sweeping changes to satisfy the needs of a single customer.

Although we will continue to be attuned to processes where distributed units offer the best overall solution for our mission-critical needs, our mainframe will never die. •

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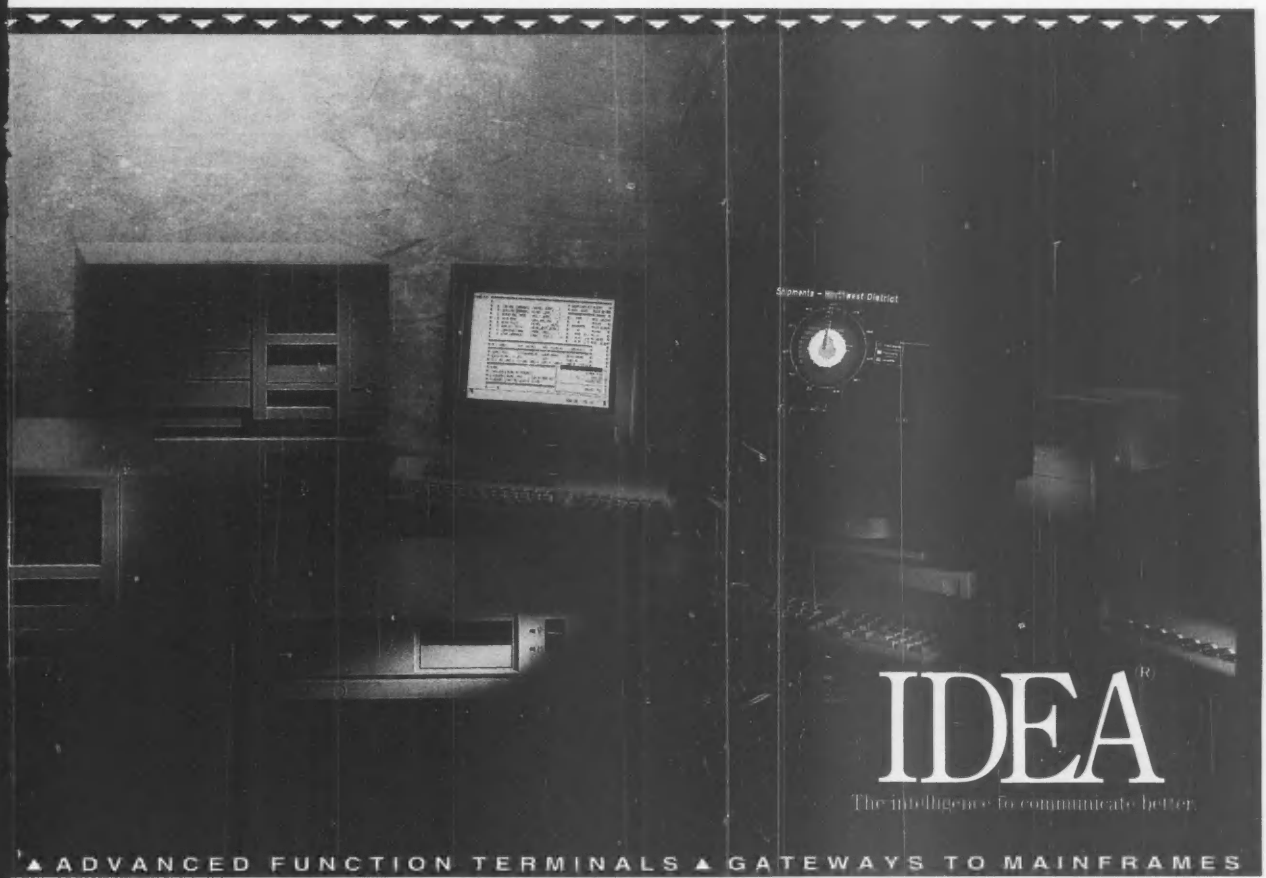
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BUYERS' SCORECARD

Amdahl and Hitachi lead the pack

Mainframes

Product scores reflect average user ratings for all measured areas, weighted by user-assigned importance. Response base: 30 users per product

Product	Highest ratings	Lowest ratings
Amdahl 5990 and 5995 SCORE 87	Reliability Compatibility Overall performance	Networking support Acquisition and maintenance cost Memory access time
Hitachi EX Series SCORE 86	Reliability Overall performance Compatibility	Networking support Cache performance Memory access time
IBM ES/9000 SCORE 84	Reliability Floor-space requirements Compatibility	Networking support Cache performance Cost per cycle
IBM 3090 SCORE 81	Reliability Compatibility Service and support	Cost per cycle Floor-space requirements Environmental controls
Bull HN DPS 90 and 9000 SCORE 80	Reliability Capacity Overall performance	Networking support Acquisition and maintenance cost Environmental controls
Unisys 2200 and A17 SCORE 79	Reliability Overall performance Ease of operation	Networking support Acquisition and maintenance cost Cost per cycle

BY MICHAEL L. SULLIVAN-TRAINOR
CW STAFF

Buyers of big iron have something in common with bargain-hunting car consumers: Both want more capacity and great mileage.

There is no greater evidence of this similarity than Amdahl Corp.'s score in *Computerworld*'s mainframe Buyers' Scorecard. Thirty users of the company's top-of-the-line mainframe products gave Amdahl the highest satisfaction ratings among six product groups, including IBM's latest offerings.

The primary areas of strength for the Amdahl products were capacity and cost per processing cycle.

Amdahl's 5990 and 5995 processors scored a total of 87 points measured across 15 categories. Though significantly lower than the possible score of 100, the total is well above the mean score of 82 for the group.

Total possible score	100
Mean score	82

The other products rated included Hitachi Data Systems Corp.'s (HDS) Models EX 60 and higher, which came in second with 86 points; IBM's Enterprise System/9000 series, third with 84 points; IBM's 3090 series, fourth with 81 points; Bull HN Information Systems, Inc.'s DPS processors, fifth with 80 points; and Unisys Corp.'s 2200 and A17 series, sixth with 79 points.

Thirty users were surveyed for each product set. Overall scores were derived by multiplying the ratings each user group gave its own product family by the importance factors all users assigned to the criteria. Scores were then converted to base 100 (see methodology next page).

While Amdahl's users rated its products highest in seven out of 15 categories, IBM's ES/9000 users rated their products highest in five categories, including the two most important to all users: reliability and overall performance. (Amdahl placed third in both reliability and performance.) The ES/9000 series was rated fourth in capacity and cost per processing cycle.

HDS' systems received the second highest reliability, performance and cost ratings from its users. The EX products also topped I/O performance and memory access time categories.

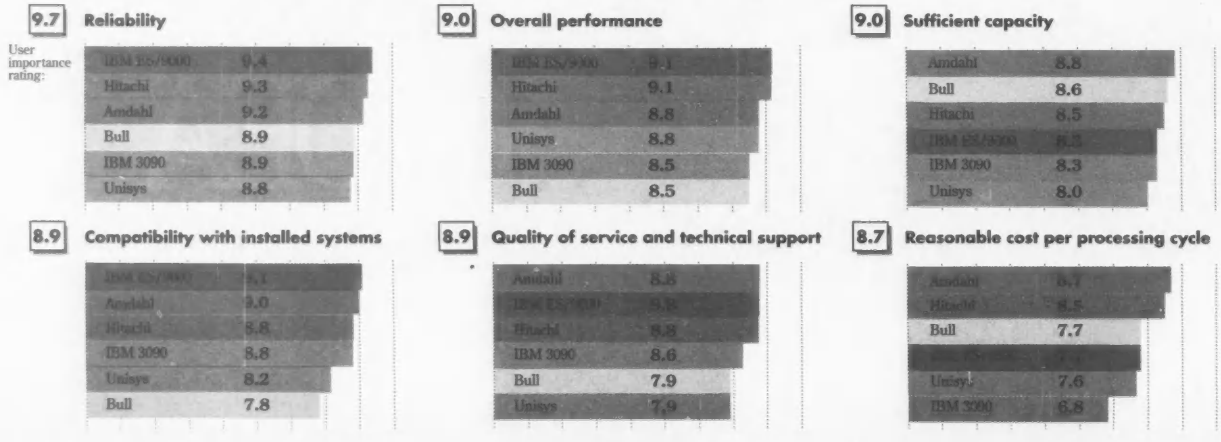
IBM's 3090 users rated it in the middle or bottom of the pack in all categories. The processor's highest ratings were for quality of service and technical support (where it placed third, behind the ES/9000), effective I/O channel control and effective cache performance. Last place ratings for the 3090 included cost per cycle (6.8 — the lowest rating in the survey), ease of operation, efficient environmental controls and reasonable floor-space requirements.

Bull's DPS series received good enough marks from its users to earn a second place in capacity. Grades for cost per cycle, efficient cache performance and floor-space requirements were slightly lower, with the DPS series placing third on each of those lists.

Unisys' processors were rated second in ease of operation and fourth in overall performance. However, the products rated last in seven categories, including reliability, capacity and service and support. •

KEY RATINGS

Amdahl's 5990 and 5995 split the highest scores in key ratings categories with IBM's Enterprise System/9000 line. The ES/9000 models edge ahead in reliability, performance and compatibility, while Amdahl's machines top capacity, service and support and cost.



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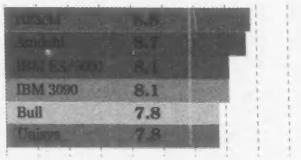
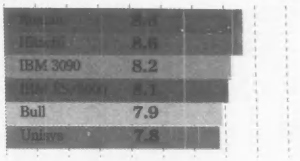
A CLOSER LOOK

Amdahl tops five of nine closer look categories, while IBM's ES/9000 scores highest in two, and Hitachi's system tops two categories as well. IBM's 3090 places last in three categories – environmental controls, ease of operation and floor space – and the ES/9000 places last in one.

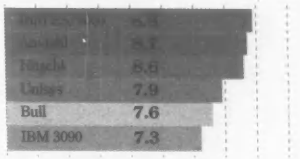
8.6 Efficient I/O performance



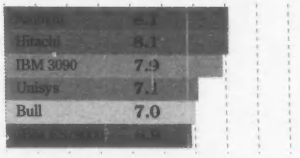
8.4 Effective I/O channel control



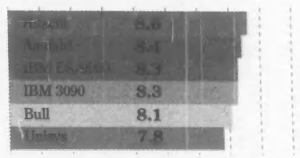
7.6 Efficient environmental controls



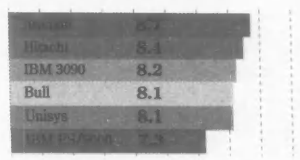
8.5 Effective networking support



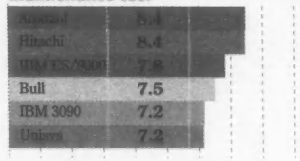
8.1 Efficient memory access time



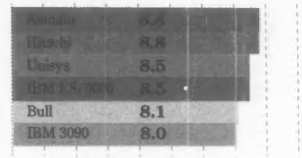
7.6 Efficient cache performance



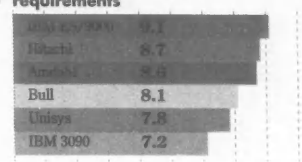
8.5 Reasonable acquisition and maintenance cost



8.0 Ease of operation



7.4 Reasonable floor-space requirements

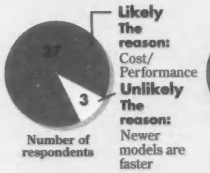


Loyalties

How likely would you be to purchase this product again?

(Reasons are based on most frequently stated responses)

Amdahl
Response base: 30

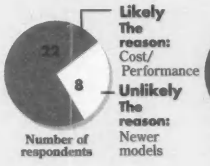


Number of respondents

Likely
The reason: Cost/ Performance

Unlikely
The reason: Newer models are faster

Hitachi
Response base: 30

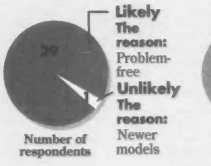


Number of respondents

Likely
The reason: Cost/ Performance

Unlikely
The reason: Newer models

IBM ES/9000
Response base: 30

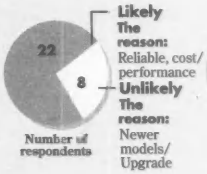


Number of respondents

Likely
The reason: Problem-free

Unlikely
The reason: Newer models

IBM 3090
Response base: 30

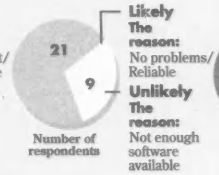


Number of respondents

Likely
The reason: Reliable, cost/ performance

Unlikely
The reason: Newer models/ Upgrade

Bull
Response base: 30

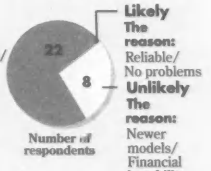


Number of respondents

Likely
The reason: No problems/ Reliable

Unlikely
The reason: Not enough software available

Unisys
Response base: 30



Number of respondents

Likely
The reason: Reliable/ No problems

Unlikely
The reason: Newer models/ Financial instability

Verbatim

What do you see as the strengths/weaknesses of this product?

(Reasons are based on most frequently stated responses)

Amdahl	Hitachi	IBM ES/9000	IBM 3090	Bull	Unisys
Likes	**Likes**	**Likes**	**Likes**	**Likes**	**Likes**
Reliability	Reliability	Reliability	Reliability	Powerful processing	Ease of use
Cost/performance ratio	Cost/performance ratio	Cost/performance ratio	Cost/performance ratio	Ease of use	Reliability
Excellent support	Compatibility	Ability to upgrade	Ability to upgrade	Reliability	Overall performance
Dislikes	**Dislikes**	**Dislikes**	**Dislikes**	**Dislikes**	**Dislikes**
Too expensive	Incompatibility	Too expensive	Too expensive	Limited packaged software	Incompatibility
Incompatibility	Too expensive	Processor too small	Not expandable	Incompatibility	Limited packaged software
Limited packaged software	Limited packaged software	Weak network service	Incompatibility	Weak network support	Weak network support

U.S. market share 1991

Total value of large systems
(in millions of dollars)

IBM	$17,570
Amdahl	$3,373
Unisys	$2,781
Hitachi	$1,137
Bull	$408

Source: Computer Intelligence/Infocorp

METHODOLOGY

Products rated in *Computerworld*'s Buyers' Scorecard on mainframes were selected based on the market share of the vendors in terms of installed base and market value.

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Forty-seven percent of the respondents were information systems directors, 26% managers, 24% vice presidents, 6% staff members and 7% other.

Ninety percent of the respondents evaluate and recommend vendors for mainframe products, 85% determine the need for such products, 87% set standards for the organization, and 83% select vendors.

Ninety-seven percent of the respondents have been involved with mainframes for five or more years. The remaining 3% have worked with them for one to four years.

Forty-one percent of the respondents work at companies with more than $1 billion in revenue. Twelve percent are at companies of between $500 million and $1 billion in revenue.

Total scores, which were weighted according to the criteria that all respondents found most important, were computed by multiplying the mean scores all users assigned to the importance of each criterion by the mean scores each user group gave to its own products.

The final scores were then converted to base 100 for clearer comparison.

ACKNOWLEDGMENTS

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Due to a lack of photographic contrast, this page did not reproduce well.

BUYERS' SCORECARD

Amdahl and Hitachi lead the pack

Mainframes

Product scores reflect average user ratings for all measured areas, weighted by user-assigned importance. Response base: 30 users per product

Product	Highest ratings	Lowest ratings
Amdahl 5990 and 5995 SCORE 87	Reliability Compatibility Overall performance	Networking support Acquisition and maintenance cost Memory access time
Hitachi EX Series SCORE 86	Reliability Overall performance Compatibility	Networking support Cache performance Memory access time
IBM ES/9000 SCORE 84	Reliability Floor-space requirements Compatibility	Networking support Cache performance Cost per cycle
IBM 3090 SCORE 81	Reliability Compatibility Service and support	Cost per cycle Floor-space requirements Environmental controls
Bull HN DPS 90 and 9000 SCORE 80	Reliability Capacity Overall performance	Networking support Acquisition and maintenance cost Environmental controls
Unisys 2200 and A17 SCORE 79	Reliability Overall performance Ease of operation	Networking support Acquisition and maintenance cost Cost per cycle

BY MICHAEL L. SULLIVAN-TRAINOR
CW STAFF

Buyers of big iron have something in common with bargain-hunting car consumers: Both want more capacity and great mileage.

There is no greater evidence of this similarity than Amdahl Corp.'s score in *Computerworld*'s mainframe Buyers' Scorecard. Thirty users of the company's top-of-the-line mainframe products gave Amdahl the highest satisfaction ratings among six product groups, including IBM's latest offerings.

The primary areas of strength for the Amdahl products were capacity and cost per processing cycle.

Amdahl's 5990 and 5995 processors scored a total of 87 points measured across 15 categories. Though significantly lower than the possible score of 100, the total is well above the mean score of 82 for the group.

Total possible score 100

Mean score 82

The other products rated included Hitachi Data Systems Corp.'s (HDS) Models EX 60 and higher, which came in second with 86 points; IBM's Enterprise System/9000 series, third with 84 points; IBM's 3090 series, fourth with 81 points; Bull HN Information Systems, Inc.'s DPS processors, fifth with 80 points; and Unisys Corp.'s 2200 and A17 series, sixth with 79 points.

Thirty users were surveyed for each product set. Overall scores were derived by multiplying the ratings each user group gave its own product family by the importance factors all users assigned to the criteria. Scores were then converted to base 100 (see methodology next page).

While Amdahl's users rated its products highest in seven out of 15 categories, IBM's ES/9000 users rated their products highest in five categories, including the two most important to all users: reliability and overall performance. (Amdahl placed third in both reliability and performance.) The ES/9000 series was rated fourth in capacity and cost per processing cycle.

HDS' systems received the second highest reliability, performance and cost ratings from its users. The EX products also topped I/O performance and memory access time categories.

IBM's 3090 users rated it in the middle or bottom of the pack in all categories. The processor's highest ratings were for quality of service and technical support (where it placed third, behind the ES/9000), effective I/O channel control and effective cache performance. Last place ratings for the 3090 included cost per cycle (6.8 — the lowest rating in the survey), ease of operation, efficient environmental controls and reasonable floor-space requirements.

Bull's DPS series received good enough marks from its users to earn a second place in capacity. Grades for cost per cycle, efficient cache performance and floor-space requirements were slightly lower, with the DPS series placing third on each of those lists.

Unisys' processors were rated second in ease of operation and fourth in overall performance. However, the products rated last in seven categories, including reliability, capacity and service and support. •

KEY RATINGS

Amdahl's 5990 and 5995 split the highest scores in key ratings categories with IBM's Enterprise System/9000 line. The ES/9000 models edge ahead in reliability, performance and compatibility, while Amdahl's machines top capacity, service and support and cost.

9.7 Reliability (User importance rating:)

IBM ES/9000	9.4
Hitachi	9.3
Amdahl	9.2
Bull	8.9
IBM 3090	8.9
Unisys	8.8

9.0 Overall performance

IBM ES/9000	9.1
Hitachi	9.1
Amdahl	8.8
Unisys	8.8
IBM 3090	8.5
Bull	8.5

9.0 Sufficient capacity

Amdahl	8.8
Bull	8.6
Hitachi	8.5
IBM ES/9000	8.3
IBM 3090	8.3
Unisys	8.0

8.9 Compatibility with installed systems

IBM ES/9000	9.1
Amdahl	9.0
Hitachi	8.8
IBM 3090	8.8
Unisys	8.2
Bull	7.8

8.9 Quality of service and technical support

Amdahl	8.8
IBM ES/9000	8.8
Hitachi	8.8
IBM 3090	8.6
Bull	7.9
Unisys	7.9

8.7 Reasonable cost per processing cycle

Amdahl	8.7
Hitachi	8.5
Bull	7.7
IBM ES/9000	7.1
Unisys	7.6
IBM 3090	6.8

A CLOSER LOOK

Amdahl tops five of nine closer look categories, while IBM's ES/9000 scores highest in two, and Hitachi's system tops two categories as well. IBM's 3090 places last in three categories – environmental controls, ease of operation and floor space – and the ES/9000 places last in one.

8.6 Efficient I/O performance

Hitachi	8.8
Amdahl	8.7
IBM ES/9000	8.1
IBM 3090	8.1
Bull	7.8
Unisys	7.8

8.4 Effective I/O channel control

Amdahl	8.6
Hitachi	8.6
IBM 3090	8.2
IBM ES/9000	8.1
Bull	7.9
Unisys	7.8

7.6 Efficient environmental controls

IBM ES/9000	8.9
Amdahl	8.7
Hitachi	8.6
Unisys	7.9
Bull	7.6
IBM 3090	7.3

8.5 Effective networking support

Amdahl	8.2
Hitachi	8.1
IBM 3090	7.9
Unisys	7.1
Bull	7.0
IBM ES/9000	6.8

8.1 Efficient memory access time

Hitachi	8.6
Amdahl	8.4
IBM ES/9000	8.3
IBM 3090	8.3
Bull	8.1
Unisys	7.8

7.6 Efficient cache performance

Amdahl	8.7
Hitachi	8.4
IBM 3090	8.2
Bull	8.1
Unisys	8.1
IBM ES/9000	7.3

8.5 Reasonable acquisition and maintenance cost

Amdahl	8.4
Hitachi	8.4
IBM ES/9000	7.8
Bull	7.5
IBM 3090	7.2
Unisys	7.2

8.0 Ease of operation

Amdahl	8.8
Hitachi	8.8
Unisys	8.5
IBM ES/9000	8.5
Bull	8.1
IBM 3090	8.0

7.4 Reasonable floor-space requirements

IBM ES/9000	9.1
Hitachi	8.7
Amdahl	8.6
Bull	8.1
Unisys	7.8
IBM 3090	7.2

Loyalties

How likely would you be to purchase this product again?

(Reasons are based on most frequently stated responses)

Amdahl
Response base: 30
Number of respondents: 27 Likely / 3 Unlikely
Likely – The reason: Cost/Performance
Unlikely – The reason: Newer models are faster

Hitachi
Response base: 30
Number of respondents: 22 Likely / 8 Unlikely
Likely – The reason: Cost/Performance
Unlikely – The reason: Newer models

IBM ES/9000
Response base: 30
Number of respondents: 29 Likely / 1 Unlikely
Likely – The reason: Problem-free
Unlikely – The reason: Newer models

IBM 3090
Response base: 30
Number of respondents: 22 Likely / 8 Unlikely
Likely – The reason: Reliable, cost/performance
Unlikely – The reason: Newer models/Upgrade

Bull
Response base: 30
Number of respondents: 21 Likely / 9 Unlikely
Likely – The reason: No problems/Reliable
Unlikely – The reason: Not enough software available

Unisys
Response base: 30
Number of respondents: 22 Likely / 8 Unlikely
Likely – The reason: Reliable/No problems
Unlikely – The reason: Newer models/Financial instability

Verbatim

What do you see as the strengths/weaknesses of this product?

(Reasons are based on most frequently stated responses)

Amdahl	Hitachi	IBM ES/9000	IBM 3090	Bull	Unisys
Likes	**Likes**	**Likes**	**Likes**	**Likes**	**Likes**
Reliability	Reliability	Reliability	Reliability	Powerful processing	Ease of use
Cost/performance ratio	Cost/performance ratio	Cost/performance ratio	Cost/performance ratio	Ease of use	Reliability
Excellent support	Compatibility	Ability to upgrade	Ability to upgrade	Reliability	Overall performance
Dislikes	**Dislikes**	**Dislikes**	**Dislikes**	**Dislikes**	**Dislikes**
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Incompatibility	Too expensive	Processor too small	Not expandable	Incompatibility	Limited packaged software
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Late-model mainframes[1]

VENDOR	PRODUCT NAME	DATE FIRST SHIPPED	PRIMARY MARKETS	MOST COMPARABLE SYSTEM	NUMBER OF CPUS	MEMORY RANGE (BYTES)	CACHE CAPACITY (BYTES)	MACHINE CYCLE TIME (NSEC)	NUMBER OF CHANNELS/ CHANNEL SPEED (BYTE/SEC.)	MAXIMUM DISK CAPACITY (BYTES)	PERFORMANCE (MIPS UNLESS OTHERWISE SPECIFIED)	BENCHMARKS[2]	SUPPORTS ETHERNET OR TOKEN RING	OPERATING SYSTEMS SUPPORTED	DISTRIBUTION CHANNELS	BASE PRICE	MONTHLY MAINTENANCE FEE FOR PROCESSOR
Amdahl Corp. (408) 746-6000	5995-350A	9/90	DP, OLTP, SE[3]	IBM ES/9000 9021 models	1	64M - 256M main storage, 0M - 1G expanded storage	128K	10	32 - 64/4.5M for parallel channels, 10M for Escon channels	Unlimited	32	NA	Both	MVS, VM, TPF, UTS	Direct	$3,208,687 with 64M bytes of main storage, 32 channels	$7,000
	5995-500A	9/90	DP, OLTP, SE	IBM ES/9000 9021 models	2	64M - 512M main storage, 0M - 1G expanded storage	256K	10	32 - 64/4.5M for parallel channels, 10M for Escon channels	Unlimited	47	NA	Both	MVS, VM, TPF, UTS	Direct	$4,211,699 with 64M bytes of main storage, 32 channels	$7,794
	5995-700A	9/90	DP, OLTP, SE	IBM ES/9000 9021 models	2	64M - 512M main storage, 0M - 1G expanded storage	256K	10	32 - 64/4.5M for parallel channels, 10M for Escon channels	Unlimited	61	NA	Both	MVS, VM, TPF, UTS	Direct	$4,962,220 with 64M bytes of main storage, 32 channels	$9,589
	5995-790A	9/90	DP, OLTP, SE	IBM ES/9000 9021 models	2	128M - 1G main storage, 0M - 2G expanded storage	256K	10	64 - 128/4.5M for parallel channels, 10M for Escon channels	Unlimited	60	NA	Both	MVS, VM, TPF, UTS	Direct	$5,939,810 with 128M bytes of main storage, 64 channels	$10,683
	5995-1100A	9/90	DP, OLTP, SE	IBM ES/9000 9021 models	3	128M - 1G main storage, 0M - 2G expanded storage	384K	10	64 - 128/4.5M for parallel channels, 10M for Escon channels	Unlimited	85	NA	Both	MVS, VM, TPF, UTS	Direct	$7,517,371 with 128M bytes of main storage, 64 channels	$14,153
	5995-1400A	9/90	DP, OLTP, SE	IBM ES/9000 9021 models	4	128M - 1G main storage, 0M - 2G expanded storage	512K	10	64 - 128/4.5M for parallel channels, 10M for Escon channels	Unlimited	108	NA	Both	MVS, VM, TPF, UTS	Direct	$9,036,840 with 128M bytes of main storage, 64 channels	$18,325
	5995-3550A	12/91	DP, OLTP, SE	IBM ES/9000 9021 models	3	256M - 1G main storage, 0M - 4G expanded storage	768K	6.5	128 - 256/4.5M for parallel channels, 17M for Escon channels	Unlimited	143	NA	Both	MVS, VM, TPF, UTS	Direct	$14,200,701 with 256M bytes of main storage, 128 channels	$21,624, $23,741 with optional EPF
	5995-4550A	12/91	DP, OLTP, SE	IBM ES/9000 9021 models	4	256M - 1G main storage, 0M - 4G expanded storage	1M	6.5	128 - 256/4.5M for parallel channels, 17M for Escon channels	Unlimited	184, 204 with Enhanced Performance Feature (EPF)	NA	Both	MVS, VM, TPF, UTS	Direct	$17,500,625 with 256M bytes of main storage, 128 channels	$26,573, $28,443 with optional EPF
	5995-6650A	Q2 92	DP, OLTP, SE	IBM ES/9000 9021 models	6	512M - 2G main storage, 0M - 8G expanded storage	1,536K	6.5	128 - 512/4.5M for parallel channels, 17M for Escon channels	Unlimited	248, 280 with EPF	NA	Both	MVS, VM, TPF, UTS	Direct	$24,071,544 with 512M bytes of main storage, 128 channels	$36,274, $40,954 with optional EPF
	5995-8650A	Q2 92	DP, OLTP, SE	IBM ES/9000 9021 models	8	512M - 2G main storage, 0M - 8G expanded storage	2M	6.5	128 - 512/4.5M for parallel channels, 17M for Escon channels	Unlimited	310, 357 with EPF	NA	Both	MVS, VM, TPF, UTS	Direct	$30,089,431 with 512M bytes of main storage, 128 channels	$45,343, $52,217 with optional EPF
Bull HN Information Systems, Inc. (508) 294-6000	DPS 9000/61	1/91	DP, OLTP, SE	IBM ES/9000 Model 500	1	128M - 512M	128K - 512K	NA	64/4.5M	1G - unlimited	NA	182 DC, 11.7 LP	Both	GCOS 8	Direct	$3,900,000 with 128M bytes of memory	$6,500
	DPS 9000/62	1/91	DP, OLTP, SE	IBM ES/9000 Model 620	2	128M - 512M	256K - 512K	NA	64/4.5M	1G - unlimited	NA	345 DC, 21.6 LP	Both	GCOS 8	Direct	$6,930,000 with 128M bytes of memory	$11,550
	DPS 9000/62T	1/91	DP, OLTP, SE	IBM ES/9000 Model 620	2	256M - 1G	256K - 1M	NA	128/4.5M	1G - unlimited	NA	345 DC, 21.6 LP	Both	GCOS 8	Direct	$7,800,000 with 256M bytes of memory	$13,000
	DPS 9000/92	1/91	DP, OLTP, SE	IBM ES/9000 Model 720	2	128M - 512M	256K - 512M	NA	64/4.5M	1G - unlimited	NA	518 DC, 35 LP	Both	GCOS 8	Direct	$9,370,000 with 256M bytes of memory	$15,616
Control Data Corp. (800) 345-6628	Cyber 2000S	6/90	DP, OLTP, SE	Larger than twice the IBM 3090-180J	2	128M - 512M	1.6M	9.4	10 - 36/3M - 25M	7.3T	52.9 (per processor)	1,500 TP1 DC, 12.9 LP, 11.7 LL (estimate)	Ethernet, FDDI	NOS/VE	Direct	$2,500,000 with 128M bytes of memory, eight channels, console, power supplies	$5,000
	Cyber 2000V	6/90	DP, SE	IBM 3090-400J	2	128M - 512M	1.6M	9.4	10 - 36/3M - 25M	7.3T	86.2 (per processor)	1,500 TP1 DC, 32 LP, 14.7 LL (estimate)	Ethernet, FDDI	NOS/VE	Direct	$2,700,000 with 128M bytes of memory, 10 channels, console, power supplies	$5,800
	Cyber 972	2/92	DP, OLTP, SE	IBM 3090-120, VAX 6000	1 - 2	64M - 512M	32K	11.2	37/25M	7.3T	10.4 (per processor)	3.1 MFLOPS LP, 3.4 MFLOPS LL	Ethernet, FDDI	NOS/VE	Direct	$533,500 with 64M bytes of memory, eight channels, console, power supplies	$1,816
	Cyber 974	2/92	DP, OLTP, SE	IBM 3090-120, VAX 6000	1 - 2	128M - 512M	32K	112	37/25M	7.3T	10.4 (per processor)	3.1 MFLOPS LP, 3.4 MFLOPS LL	Ethernet, FDDI	NOS/VE	Direct	$597,500 with 128M bytes of memory, eight channels, console, power supplies	$1,816
	Cyber 2000U	6/90	DP, OLTP, SE	IBM ES/9000 Model 620	3	512M - 2G	512K	16	1,224/2M	7.3T	118 (per processor)	1,500 TPS, 29 MFLOPS LP, 13.3 MFLOPS LL	Ethernet, FDDI	NOS/VE	Direct	$2,500,000 with 128M bytes of memory, eight channels, console, power supplies	$5,360

[1]All products listed first shipped or were announced after January 1990. [2]Per-second performance ratings, based on the following industry-standard benchmarks: DC = Debit/Credit (transactions based on 95% subsecond response); LP = Linpack (100 by 100 full-precision in MFLOPS); LL = Livermore Loops (harmonic mean; 14 loops). Vendors supplied either actual or estimated benchmark figures. [3]DP = batch commercial data processing; SE = scientific engineering; OLTP = on-line transaction processing. [4]Calculations done by Bill Husband, director, technology planning, Meridian Technology Leasing Services in Deerfield, Ill.

The companies included in this chart responded to a recent survey conducted by *Computerworld*. When a vendor is unable to provide specific information about its product, the abbreviation NP (not provided) is used. When a question does not apply to a vendor's product, the abbreviation NA (not applicable) is used. Contact vendor for further product information.

PRODUCT SPOTLIGHT

VENDOR	PRODUCT NAME	DATE FIRST SHIPPED	PRIMARY MARKETS	MOST COMPARABLE SYSTEM	NUMBER OF CPUS	MEMORY RANGE (BYTES)	CACHE CAPACITY (BYTES)	MACHINE CYCLE TIME (NSEC)	NUMBER OF CHANNELS/ CHANNEL SPEED (BYTE/SEC.)	MAXIMUM DISK CAPACITY (BYTES)	PERFORMANCE (MIPS UNLESS OTHERWISE SPECIFIED)	BENCHMARKS[2]	SUPPORTS ETHERNET OR TOKEN RING	OPERATING SYSTEMS SUPPORTED	DISTRIBUTION CHANNELS	BASE PRICE	MONTHLY MAINTENANCE FEE FOR PROCESSOR
Digital Equipment Corp. (508) 467-5431	VAX 9000 Model 430	6/90	DP, OLTP, SE	IBM ES/9000 Model 620	4	512M - 2G	512K	16	1,224/2M	7.3T	157	NA	Ethernet	VMS	Direct, OEM	$3,390,000 with 512M bytes of memory, two Vaxcluster interfaces, power supplies, operating system, two Ethernet adapters	$8,325
	VAX 9000 Model 440	6/91	DP, OLTP, SE	IBM ES/9000 Model 580	3	512M - 2G	348K	16	1,224/2M	7.3T	79	NA	Ethernet	VMS, Ultrix	Direct, OEM	$2,220,000 with 256M bytes of memory, two Vaxcluster interfaces, power supplies, operating system, two Ethernet adapters	$10,059
Hitachi Data Systems Corp. (408) 970-1000	HDS EX series Model 11	1/91	DP, SE	IBM ES/9000 Model 150	1	32M - 512M	32K	20	8 - 32/3M, 4.5M, 6M	Unlimited	NP	NP	Both via external controller	VSE/SP, VSE/ESA, MVS/SP, MVS/XA, MVS/ESA, VM/SP, VM/HPO, VM/XA, VM/ESA	Direct	$293,000	$497
	HDS EX series Model 22	1/91	DP, SE	IBM ES/9000 Model 170	1	32M - 512M	32K	20	8 - 32/3M, 4.5M, 6M	Unlimited	NP	NP	Both via external controller	VSE/SP, VSE/ESA, MVS/SP, MVS/XA, MVS/ESA, VM/HPO, VM/XA, VM/ESA	Direct	$385,000	$599
	HDS EX series Model 27	1/91	DP, SE	IBM ES/9000 Model 190	1	32M - 512M	32K	20	8 - 32/3M, 4.5M, 6M	Unlimited	NP	NP	Both via external controller	VSE/SP, VSE/ESA, MVS/SP, MVS/XA, MVS/ESA, VM/HPO, VM/XA, VM/ESA	Direct	$545,000	$729
	HDS EX series Models 31, 33	1/91, (Model 31)7/90 (Model 33)	DP, SE	IBM ES/9000 Model 210	1	32M - 512M	64K	17 - 20	8 - 32/3M, 4.5M, 6M	Unlimited	NP	NP	Both via external controller	VSE/SP, VSE/ESA, MVS/SP, MVS/XA, MVS/ESA, VM/SP, VM/HPO, VM/XA, VM/ESA	Direct	$660,000, $772,000	$903, $1,023
	HDS EX series Model 38, 42	1/91	DP, SE	IBM ES/9000 Model 260 (Model 38), ES/9000 Model 320 (Model 42)	2	32M - 512M	64K - 128K	20	8 - 32/3M, 4.5M, 6M	Unlimited	NP	NP	Both via external controller	VSE/SP, VSE/ESA, MVS/SP, MVS/XA, MVS/ESA, VM/SP, VM/HPO, VM/XA, VM/ESA	Direct	$957,000, $1,206,000	$1,646, $2,399
	HDS EX series Model 44	7/91	DP, SE	IBM ES/9000 Model 320	2	32M - 512M	128K	17 - 20	8 - 32/3M, 4.5M, 6M	Unlimited	NP	NP	Both via external controller	VSE/SP, VSE/ESA, MVS/SP, MVS/XA, MVS/ESA, VM/SP, VM/HPO, VM/XA, VM/ESA	Direct	$1,424,000	$2,626
	HDS EX series Model 85	12/90	DP, SE	IBM 3090 - 380J	3	256M - 1G	384K	16.5	32 - 128/3M, 4.5M, 6M	Unlimited	NP	NP	Both via external controller	VSE/ESE, MVS/SP, MVS/XA, MVS/ESA, VM/SP, VM/HPO, VM/XA, VM/ESA	Direct	$5,362,000	$13,731
	HDS EX series Model 310	6/91	DP, SE	IBM ES/9000 Model 740	3	256M - 2G	768K	8	32 - 64/3M, 4.5M, 6M	Unlimited	NP	NP	Both via external controller	MVS/SP, MVS/XA, MVS/ESA, VM/SP, VM/HPO, VM/XA, VM/ESA	Direct	$11,324,000	$17,856
	HDS EX series Model 420	5/91	DP, SE	IBM ES/9000 Model 820	4	512M - 2G	1M	8	64 - 128/3M, 4.5M, 6M	Unlimited	NP	NP	Both via external controller	MVS/SP, MVS/XA, MVS/ESA, VM/SP, VM/HPO, VM/XA, VM/ESA	Direct	$15,006,000	$24,817
	HDS EX series Model 520	Q2 92	DP, SE	IBM ES/9000 Model 860	5	512M - 2G	1.2M	8	64 - 128/3M, 4.5M, 6M	Unlimited	NP	NP	Both via external controller	MVS/SP, MVS/XA, MVS/ESA, VM/SP, VM/HPO, VM/XA, VM/ESA	Direct	$17,870,000	$26,799
	HDS EX series Model 620	Q2 92	DP, SE	IBM ES/9000 Model 900	6	512M - 2G	2.3M	8	64 - 128/3M, 4.5M, 6M	Unlimited	NP	NP	Both via external controller	MVS/SP, MVS/XA, MVS/ESA, VM/SP, VM/HPO, VM/XA, VM/ESA	Direct	$20,485,000	$30,803
IBM (800) 426-2468	ES/9000, 9221 Models 120, 130, 150, 170	12/90 (Models 120, 130, 150), Q4 91 (Model 170)	DP, OLTP, SE	NA	1	256M	NA	NP	12 (Models 120, 130, 150), 24 (Model 170)/10M	NA	1.8 - 6.2[4]	NP	Both	MVS/ESA, VM/ESA, VSE/ESA, AIX/ESA	Direct	$60,000 - $245,000	$400 - $775

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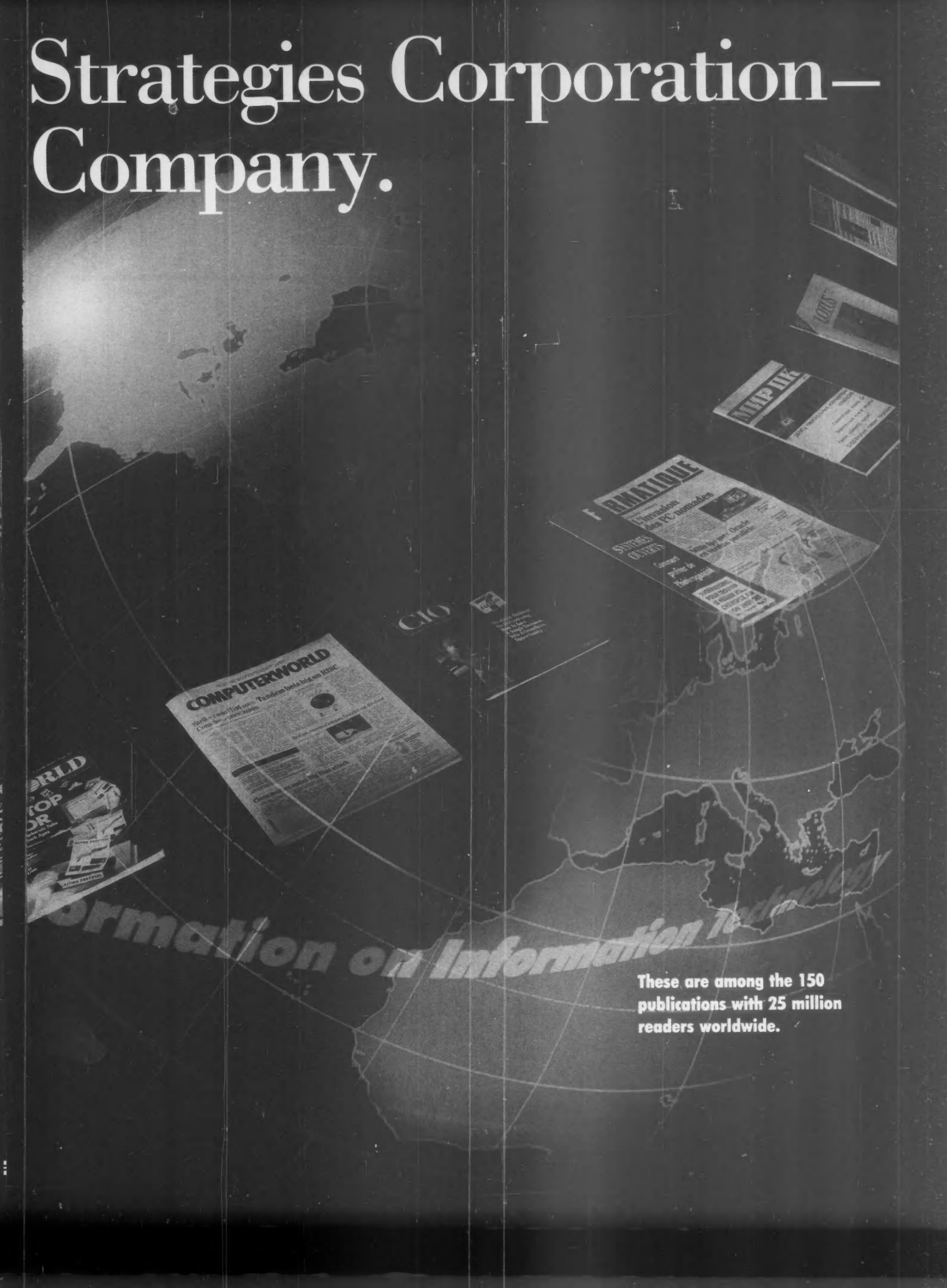

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VENDOR	PRODUCT NAME	DATE FIRST SHIPPED	PRIMARY MARKETS	MOST COMPARABLE SYSTEM	NUMBER OF CPUS	MEMORY RANGE (BYTES)	CACHE CAPACITY (BYTES)	MACHINE CYCLE TIME (NSEC)	NUMBER OF CHANNELS/ CHANNEL SPEED (BYTE/SEC.)	MAXIMUM DISK CAPACITY (BYTES)	PERFORMANCE (MIPS UNLESS OTHERWISE SPECIFIED)	BENCHMARKS[2]	SUPPORTS ETHERNET OR TOKEN RING	OPERATING SYSTEMS SUPPORTED	DISTRIBUTION CHANNELS	BASE PRICE	MONTHLY MAINTENANCE FEE FOR PROCESSOR
IBM (cont.)	ES/9000, 9121 Models 190, 210, 260, 320, 440, 480 (air cool)	1/91 (Model 210), 3/91 (Model 190), 9/90 (Models 260, 320), 3/91 (Models 440, 480)	DP, OLTP, SE	NA	2	512M (Model 190) - 1G (Models 210, 260, 320, 440, 480)	NA	NP	32 (Model 190), 48 (Models 210, 260, 320, 440, 480)/10M	NA	6.1 - 38.1[4]	NP	Both	MVS/ESA, VM/ESA, VSE/ESA, AIX/ESA	Direct	$575,000 - $3,120,000	$1,000 - $5,100
	ES/9000, 9021 Models 340, 500, 580, 620, 720, 820, 900	9/90 (Models 340, 500, 580, 620, 720), 9/91 (Models 820, 900)	DP, OLTP, SE	NA	1 - 6	1G (Model 340), 2.75G (Models 500, 580), 4.5G (Models 620, 720), 9G (Models 820, 900)	NA	NP	64 - 256/10M	NA	19.0 - 276.0[4]	NP	Both	MVS/ESA, VM/ESA, VSE/ESA, AIX/ESA	Direct	$2,125,000- $22,280,000	$2,775 - $32,340
ICL (011-44) 41-223-1301 ICL Stanford (203) 968-7200	Series 39 SX 580-20	9/90	DP, OLTP	IBM ES/9021-660	2	256M - 1G	NA	11.8	32/5M	1.2T	88	323 TPS	Ethernet	VME, XPG3	Direct, VAR	$6,287,000	$8,340
	Series 39 SX 558-20	9/90	DP, OLTP	IBM ES/9021-580	2	256M - 768M	NA	11.8	24/5M	1.2T	60	220 TPS	Ethernet	VME, XPG3	Direct, VAR	$4,212,000	$6,300
	Series 39 SX 510-20	1/91	DP, OLTP	IBM ES/9021-500	2	128M - 512M	NA	11.8	16/5M	1.2T	40	153 TPS	Ethernet	VME, XPG3	Direct, VAR	$2,308,000	$4,850
	Series 39 SX 480-20	1/91	DP, OLTP	IBM ES/9021-340	2	128M - 512M	NA	11.8	16/5M	1.2T	29	113 TPS	Ethernet	VME, XPG3	Direct, VAR	$2,156,000	$3,700
	Series 39 SX 450-10	1/91	DP, OLTP	IBM ES/9021-320	1	64M - 256M	NA	11.8	8/5M	1.2T	21	82 TPS	Ethernet	VME, XPG3	Direct, VAR	$1,638,000	$2,300
	Series 39 SX 420-10	1/91	DP, OLTP	IBM ES/9121-260	1	64M - 256M	NA	11.8	8/5M	1.2T	15	61 TPS	Ethernet	VME, XPG3	Direct, VAR	$1,175,000	$1,700
	Series 39 DX 270-20	9/91	DP, OLTP	IBM AS/400 D70	2	32M - 128M	NA	100	10/5M	1.2T	6	29 TPS	Ethernet	VME, XPG3	Direct, VAR	$282,000	$350
	Series 39 DX 230-20	9/91	DP, OLTP	IBM AS/400 D60	2	32M - 128M	NA	100	10/5M	1.2T	4.5	21 TPS	Ethernet	VME, XPG3	Direct, VAR	$209,000	$270
	Series 39 DX 200-10	9/91	DP, OLTP	IBM AS/400 D50	1	16M - 64M	NA	100	6/5M	1.2T	3.5	16 TPS	Ethernet	VME, XPG3	Direct, VAR	$136,000	$130
	Series 39 DX 190-20	9/91	DP, OLTP	IBM AS/400 D50	2	32M - 128M	NA	100	10/5M	1.2T	3	15 TPS	Ethernet	VME, XPG3	Direct, VAR	$156,000	$210
	Series 39 DX 170-10	9/91	DP, OLTP	IBM AS/400 D45	1	16M - 64M	NA	100	6/5M	1.2T	2.5	11 TPS	Ethernet	VME, XPG3	Direct, VAR	$99,000	$90
	Series 39 DX 130-10	9/91	DP, OLTP	IBM AS/400 D35	1	16M - 64M	NA	100	6/5M	1.2T	1.5	8 TPS	Ethernet	VME, XPG3	Direct, VAR	$73,000	$60
NCR Corp. (513) 445-5000	NCR System 3600	12/91	OLTP, decision support	NA	Up to 256	128M - 6.3G	8M	33MHz-50 MHz	NA	80M	2,000	NA	Both	Unix Version 4	Direct, systems integrators	$2,000,000 for two application processors and eight module processors	$16,000
	NCR 3550	11/91	DP, OLTP, server	Sequent, Pyramid	8	16M - 512M	256K	20	NA	80M	80 - 320	NA	Both	Unix Version 4	Direct, OEM, VAR	$76,150 for 250 MHz and internal SCSI adapter, 25M-byte tape drive	$317
Stratus Computer, Inc. (508) 460-2000	XA2000 Continuous Processing Systems Models 2260, 2460, 2660, 2860	2/90	OLTP	IBM 3090, VAX 9000, Tandem Cyclone	48 (duplexed)	64M - 1G (duplexed)	1.5M - 6M	42	2 - 112/4M	1.6G - 249.6G (duplexed)	NA	RAMP-C: 266, 250 trans/hour	Moderate mix (Model 2260) 1,065,024 TPH moderate mix (Model 2860)	VOS	Direct, OEM, VAR	$2,350,000 - $9,100,000 with 6M to 256M bytes duplexed memory, two to eight channels, power supplies, two to eight duplexed 781M-byte disks	$4,666 (2260), $9,078 (2460), $13,520 (2660), $17,934 (2860)
Tandem Computers, Inc. (408) 285-6000	Nonstop Cyclone/R 5000 series	9/91	OLTP	IBM ES/9000	16	64M - 2G	1M - 8M	NA	2 - 16/5M	4 - 400G	NA	None	Both	Guardian 90	Direct, OEM, VAR	$535,000 with two CPUs, 64M bytes of memory, 32 I/O slots	$1,147
Unisys Corp. (215) 986-5367	2200 series/ 440UC	3/91	DP, OLTP	IBM AS/400, ES/9221, 9121	1 - 6	32M - 64M	64K	NP	4 - 24/3.1M	6T	NA	NP	Ethernet	OS 1100	Direct	$301,524 1 IP, 32M bytes of memory, four channels	$370 for the systems
	2300 series Model 600ES	5/90	DP, OLTP	IBM ES/9121, 9021	1 - 4	32M - 128M	256K	NP	176/3.1M	24T	NA	NP	Ethernet	OS 1100	Direct	$2,352,240 1 IP, 32M bytes of memory, four channels	$3,610 for the system
	2200 series Model 900	6/92	DP, OLTP	IBM ES/9021	2 - 8	256M - 2G	64K per IP primary, 512 per IP secondary	NP	384/3.1M, 4.5M	98T	NA	NP	Ethernet	OS 1100	Direct	$8,403,464 2 IP, 256M bytes of memory, eight channels	$8,970 for the system
	MA 825 CCP (Micro A, A series)	1/91	DP, OLTP	IBM AS/400 Models 25, 35	1	12M - 36M	NA	48	1/1.2M	280M - 1.4G	0.6	TPC-A 7.96 TPS 1,195 TPS 21.60K/ TPS 22.38K/ TPS	Both	MCP/AS	Direct, VAR	$19,900 with 12M bytes of memory, one channel, one tape drive, 280M-byte disk	NP
	A series Models A16	6/90	DP, OLTP, SE	IBM ES/9000	1 or 2	48M - 1.536G	NA	19, 38	64/10M	1.5T	8.2 - 55	272.5 TPS	Both	MCP/AS	Direct	$900,000 - $5,900,000 with 48M bytes of memory, two channel adapters	NP
	A series Models A19	11/91	DP, OLTP, SE	IBM ES/9021 Models 520 - 900, Hitachi EX310/ 420, Amdahl 5995 M series	1 - 6	96M - 2.3G	NA	19, 38	256K/10M	5.8G	51 - 240	NP	Both	MCP/AS	Direct	$5,270,000 - $25,540,000 with 96M bytes to 192M bytes of memory	NP
	V400, V500 series Models V410, V430, V480, V510, V530	3/91	Financial IS, health care/ gov't	IBM AS/400 to 3090-170H	2	10M - 160M	40M	NP	8 - 64/8M	100M - 450G	NP	NP	Both	MCP/VS	Direct	$108,000 - $2,800,000 with 10M bytes to 40M bytes of memory, four to eight channels, one to 12 power supplies	NP
	System 80 Models 7E, 50	6/90 (Model 7E), 5/91 (Model 50)	DP, OLTP	IBM AS/400	1	8M - 64M	32K - 128K	125 (Model 7E), 100 (Model 50)	2- 64/2.2M - 4M	256G	0.4 - 4	NP	Ethernet	OS/3	Direct	$70,000-$350,000 with 8M bytes to 16M bytes of memory, one to three channels, power supplies	Varies by model

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The choice is yours

Four steps to getting the enterprisewide LAN operating system that's right for you

BY ROBERT LEM

A multinational engineering company, which operates in more than 25 states and three countries, wanted to find a network operating system that would support the distributed structure of the organization. The firm planned to use the local-area network environment as a platform to launch its information systems into the next century.

The company had, over the years, compiled a variety of systems and networks: a centralized IBM Application System/400 network, more than 500 stand-alone personal computers representing 26 different vendors and three incompatible LANs in separate district offices. At this point, its goal was to establish a corporate LAN standard to connect all the PCs and existing LANs, provide access to the AS/400 and establish a backbone for future enterprisewide computing. The firm also saw the establishment of a LAN standard as a way of minimizing the flow of divergent technologies into it.

The IS chief at the company was faced with a critical decision many of you are dealing with today: choosing a network operating system standard for the enterprise. This choice is key because although your selection of network topology and architecture is important to the LAN implementation, the network operating system plays the biggest role in determining the LAN's functionality, manageability and — the ultimate test — acceptance by end users.

Lem is a senior associate specializing in local- and wide-area network configuration and planning at consulting firm Boston Systems Group, Inc.

How to know when it's right

How do you navigate your way through all the product offerings and pick a LAN operating system for your distributed enterprise? How do you know which product has the right stuff for your company?

The best way is to be structured about it. Try using a four-step approach that is both quantitative and qualitative:

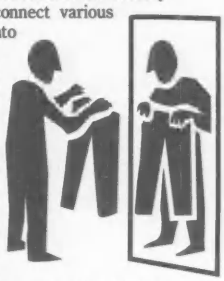
1) Develop and rate evaluation criteria.
2) Define the current and future operating environment.
3) Identify and evaluate the network alternatives.
4) Test and prototype target products.

You can begin your search for an enterprise LAN by pinpointing specific criteria your choice must adhere to. Most companies find that setting up an evaluation committee made up of IS staffers and business end users can streamline the task and ensure that you'll get a more balanced view of what your company actually needs.

One important charter of this committee is to talk to and survey IS and business users to compile a list of the criteria that they are most interested in.

Tamar Haber-Shaim

Specific criteria that you may come across include need for a menu or graphical user interface; ease of installation; scope of vendor technical support; ease of LAN management and administration; cost, speed and performance; wide-area communications capabilities; ability to access other computing platforms; security; fault tolerance and recovery abilities; ability to connect various workstation types into the LAN; global naming services; printing capabilities; and upgrade and enhancement options.



At this point, you'll want to categorize the criteria and prioritize them, which will make the selection process easy to conduct and more modular. Typical categories include business, operational, organizational and technical groupings. Business criteria refer to overall business, economic or competitive issues that can affect the LAN selection process. Operational criteria refer to tactical issues and operating characteristics such as LAN support. Organizational criteria refer to people issues, such as impact of the LAN on the IS structure. Technical criteria refer to hardware, software and communications issues affecting the LAN selection.

Weighted by importance

Once grouped, the myriad criteria a company comes up with can be weighted in terms of importance by the evaluation committee. The weighting process is straightforward: The committee assigns a weight number to each element on a scale of 1 to 5, with 1 being the least important. This allows criteria of equal importance to be weighted uniformly.

As a rule of thumb, criteria that are vital to short-term goals (for example, ease of installation) or those that are necessary for establishing long-term goals (for example, speed and performance) are usually given a weight of 5. "Wish list" criteria that are not vital but are desirable (for example, global naming services) are usually weighted at 3. Criteria that are not applicable (for a single

Continued on page 86

- **Surveys, surveys, surveys**
- **Scoring products by their merits**
- **Evaluation do's and don'ts**

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Continued from page 85

office or small company, WAN capabilities may fall in this category) are given a weight of 1.

Prioritizing these criteria and assigning an importance weight to them provides a way of streamlining the assessment process by eliminating issues irrelevant to the evaluation.

After going through this process, the engineering firm came up with the Top 3 criteria in each category:

Business
- ▶Stable vendor with established technical direction and international presence.
- ▶Growth options.
- ▶Security.

Operational
- ▶Support for multiple workstation types (Apple, Sun, IBM PC and others).
- ▶Ease of local and remote network management.
- ▶Corporatewide vendor technical support.

Organizational
- ▶Minimal impact on IS organization.
- ▶Ease of local and remote management.
- ▶Minimal need for end-user network management.

Technical
- ▶Speed and performance.
- ▶Wide-area communications capabilities.
- ▶Ability to access other platforms.

Step 2 in the operating system selection process consists of defining the operating system environment, which will ease you naturally into Step 3, selecting a concise set of LAN alternatives. A common configuration will be the base against which to compare alternative operating system products.

The engineering company defined its environment by conducting a series of interviews and surveys at various management and operational levels. It used common analysis tools such as data-flow diagrams and organizational charts to create a general model of information flow, procedures, roles and responsibilities of business areas in the engineering firm.

The interviews revealed that most users needed the new system to be compatible with the company's centralized IBM AS/400 network. Users were dependent on the AS/400 and needed all the functionality they were accustomed to having with stand-alone emulation boards, including shared folders, PC support and full terminal emulation.

The model revealed that the company needed to share accounting, sales, marketing and engineering data at the district, divisional and home office levels. In addition, the district offices needed to access the centralized financial network for payroll information. These mandatory access paths outlined the firm's need for a distributed LAN architecture that would allow access to all points of the organization. By defining its operating environment, a company puts its LAN selection into a business framework.

What's the score?

67 46

The scoring matrix helps determine which specific vendor handles your most important LAN criteria best

Criteria	Weight*	Banyan Vines Score	Banyan Vines Weighted score	Novell Netware Score	Novell Netware Weighted score
Menu or graphical user interface	4	4	16	2	8
Easy to install	5	5	25	4	20
Vendor technical support	2	3	6	3	6
Easy to manage and administer remotely	4	5	20	3	12
Total score			67		46

*Companies assign criteria weight on a scale of 1 to 5, with 5 being most important. LAN score indicates on a scale of 1 to 5 how well the product meets the criteria, with 5 being a good match.

Source: Boston System Group, Inc. CW Chart: Michael Siggins

Beneath the surface

Selecting specific LAN products for review involves some digging. Finding out which products address the majority of your criteria and fit into your operating environment is an investigative process based on research, input from a vendor's current and former customers and word-of-mouth recommendations.

You will likely want to set up meetings with vendors that are strong candidates, providing them with the evaluation criteria and typical operating environment to study before the meeting. This allows candidates to zero in on areas of key import to you.

However, make sure you understand vendor claims about how well their products meet your evaluation criteria. In the case of the engineering firm, it asked vendors to put together a demonstration of their products' AS/400 connectivity functions to verify claims. It is better to find product weaknesses now rather than after you have installed the LAN.

At this point, you should set up a scoring matrix (see chart above). The matrix should list your weighted criteria as well as the score you give each product in terms of meeting that criteria. That score is based on a 1-to-5 scale, with 5 given to those products that meet the criteria best. You then multiply criteria weight by product score to get a weighted score for each offering.

The engineering firm's evaluation committee gave scores to each vendor it had on its short list based on evaluation materials and demonstrations. Each member formulated his own personal scoring matrix, comparing all the scores in a roundtable discussion. Discrepancies in the scores were resolved by unanimous consent. (Note: When all else fails, you can use an average of personal scores.)

Banyan Systems, Inc.'s Vines and IBM's OS/2 LAN Manager emerged as the leaders in the evaluation, based on meeting criteria such as multiple platform access, remote network management and stable market position.

Other important factors

However, such weighted scores are not the sole judge by which a company should make its decision. The scores should be used as an indicator, helping you eliminate from consideration those products whose weighted scores are significantly lower than the rest. But products with similarly high scores must be judged on more quantitative information. That's when prototype testing comes in. Your criteria list developed during the evaluation can be used as a checklist.

Because Vines and OS/2 LAN Manager were on nearly equal footing after the engineering firm's evaluation, the company decided to verify several of the AS/400 connectivity and network management functions. It brought both products in-house for prototype testing.

After testing — and based on a good match between the company's needs and Vines AS/400 connectivity and network management capabilities — that product got the go-ahead.

Choosing from the myriad options in the LAN marketplace need not be like walking blindfolded through a minefield. In narrowing down your options based on your needs, you can come up with a much smaller and hence more manageable set of systems from which to choose.

This process is not reserved only for selecting the big-boy vendors; it can help you decide among lesser known products that may be more appropriate for your firm. This approach will help you decide which vendor has the right stuff to take your firm into the 1990s. •

Before you settle on a LAN . . .

Here are some do's and don'ts for evaluating enterprisewide LAN operating systems:

DO take a test drive. You usually take a car out for a test drive before you buy it. Why not do the same when buying a LAN? See if the vendor is willing to lend you an evaluation copy of the product. If not, then request a demonstration from the vendor. Just make sure that the vendor can show you specific examples of how the product will help you meet your criteria.

DON'T assume that all features of a LAN will be appropriate for your situation. LANs have so many features and functions now that it is very easy to get lost in all the hype and marketing pitches. Choosing a LAN based on features you don't need won't help you.

DON'T make this a glass-house decision only. Factors besides technical criteria will play a role in the LAN decision. User experience, installed base, cost and support are all key issues that must be considered.

DO build in flexibility. Assume whatever product you choose will be outdated within two years. The technology will continue to evolve, and whatever architecture you choose must be flexible enough to incorporate new technologies. You should periodically repeat your evaluation procedure, even on established LANs, to determine if your choice is living up to your expectations.

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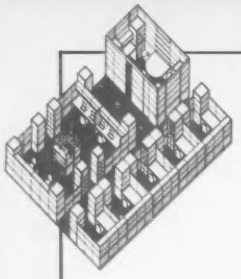

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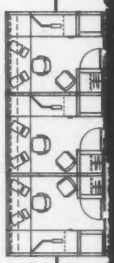

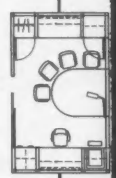

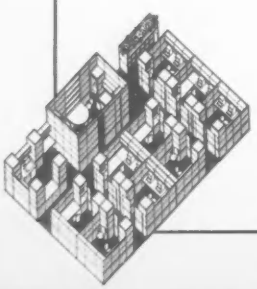

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Up or out

► What do you do with a business that drains $15 million from your bottom line, causing annual profits to plummet 27%? Faced with that question last week, computer leasing and disaster recovery player **Comdisco, Inc.** came up with one decisive answer: Get out. The company has hired consultant First Boston Corp. to help it exit its oil and gas investments in the manner least disruptive to investors and allies, a company spokesman said. In addition to net earnings of $69 million, Comdisco reported revenue up 13% to $2.2 billion for fiscal 1991.

End of an era

► Sunnyvale, Calif.-based **Advanced Micro Devices, Inc.** last week announced it will shut down its last 4-in. wafer fabrication plant — a Santa Clara, Calif.-based facility known as "Fab 5" — sometime after March 1992. "The old gives way to the new," said Chairman and Chief Executive Officer W. J. Sanders III, adding that flat and fading demand for bipolar wafers should be "more than offset in a recovering economy" by growth in higher density lines.

Double up

► In a near doubling of its earlier five-year goals, Midwest regional Bell parent company **Ameritech** last week unveiled a plan to usher 80% of its 16.4 million customer lines into the world of advanced communications — including voice, data and video — by 1996. According to the new game plan, Ameritech will replace 276 analog switching centers with digital systems and upgrade still more, rendering some 13 million Integrated Services Digital Network-capable lines.

Bill it here

► The U.S. House of Representatives has passed a bill that would modernize the Export Administration Act. It establishes a "license-free Cocom" zone for the U.S. and 16 allies within which nearly all goods may move without export licenses. It also provides for automatically updating the performance threshold for supercomputers allowed for export: The minimum would be set at 25% of the processing power of the two fastest commercially available machines.

Technology comes first at Quarterdeck

Firm hasn't changed its 'business-as-usual' philosophy of putting technology before marketing

BY CHRISTOPHER LINDQUIST
CW STAFF

SANTA MONICA, Calif. — Niche companies can run into problems when their bigger competitors decide to put on the squeeze.

However, $48 million Quarterdeck Office Systems has stayed ahead so far by using a talent for putting technology before marketing — a strategy that is, ironically, something of an anomaly in the technology market today.

As a result, however, Quarterdeck's memory management and multitasking software products have garnered a group of loyal, technically savvy users. And word-of-mouth advertising from those users has translated into top-selling software and a successful business.

Unhappy converter

One such user is being forced by his company to leave Quarterdeck's Desqview multitasking package for Microsoft Corp.'s Windows, but he said he is not switching without a fight.

Bob Koehn, an operations manager at American Airlines, said his company is switching to Windows because most software is being designed to run on the graphical platform. Koehn said he much prefers Desqview.

"Quarterdeck [Desqview] was stable and solid from the get-go," he said. "With Windows, I've had nothing but headaches."

Koehn added that Quarterdeck's technical support people always seemed more knowledgeable than those at Microsoft, which made his job easier. "When you talk to Microsoft, you get telephone answerers," he said. Quarterdeck "was more responsive — faster."

What began in 1981 as a partnership among former Citicorp employees has grown into a company that logged $26 million in 1990 revenue. And analysts' estimates that the firm would top $40 million in sales this year were recently borne out when Quarterdeck reported that net sales increased 82% to $48 million for 1991.

Quarterdeck made its initial public offering in June. The stock quickly soared from $10 to $23, buoyed by favorable reports from securities firms such as Mabon Securities Corp. and Montgomery Securities. Nor have analysts' opinions changed: The most recent listings from Mabon and Montgomery rate Quarterdeck as "attractive" and "outperforming expectations," respectively.

Quarterdeck claims a number of 'firsts' in the PC software industry

July 1985 Quarterdeck releases Version 1.0 of Desqview, the first PC operating environment that allows users to multitask off-the-shelf DOS programs in on-screen windows.

May 1987 Desqview Version 2.0, the first program to allow the display of DOS text and graphics applications in windows, is released. Desqview 2.0 also uses 'high' memory to free more room for conventional DOS programs.

April 1988 Patent is awarded to Quarterdeck for the invention of the technology behind Desqview.

CW Chart: Michael Siggins

Quarterdeck's president, chief executive officer and cofounder, Therese Myers, said going public has not changed either the company's mission or its style, however. "We just keep merrily on our way," she said. "Business as usual is the most important thing."

Quarterdeck specializes in personal computer products that could be described as systems software — the Quarterdeck Expanded Memory Manager, the Desqview multitasker and the Manifest diagnostic program. None of the products is particularly "sexy," but both users and reviewers consider each to be a top-notch tool to help people, especially power users, get the most out of their PCs.

Great idea

Myers got the idea for Quarterdeck's first product, the Desqview multitasking DOS environment, from her work as a vice president of product design at the Lexar Corp. division of Citicorp. One of her tasks at the company was to put together "workstations" — PCs capable of integrating multiple applications, such as electronic mail and word processing.

When she and another Citicorp employee, Gary Pope, left to form their own firm, they decided to take the idea of a workstation further, to allow users to integrate their own packages into a highly customized whole. The firm started working with the ill-fated Digital Research, Inc. CP/M operating system but soon switched to the IBM Personal Computer and DOS when they were introduced.

Myers said Quarterdeck originally aimed at the "Davy Crocketts" of personal computing. "They were the ones who

Continued on page 97

French firm outsources to DEC Singapore

BY EDWARD LIM
SPECIAL TO CW

SINGAPORE — French shipping company Compagnie Generale Maritime-Asia (CGM Asia) has become one of the first companies in Singapore to opt for outsourcing to meet its information technology needs.

The company, which recently established its regional headquarters here, has signed a facilities management contract with Digital Equipment Corp. Singapore.

Under the $588,000-a-year contract, DEC will install, operate and maintain two VAX 6000 computers in a special computer room at its Customer Support Center in the Tong Nam Building. The two computers were acquired under a separate contract worth about $1.2 million between CGM Asia and DEC's office in France.

Guy Le Point, CGM Asia's director of information systems, said the firm opted for outsourcing in order to focus its own resources on its core business.

"Our business is shipping. Our intention is not to develop a large team of electronic data processing specialists in Singapore," he added.

Le Point also said it would have taken CGM Asia a year to install the computers and train a team of information technology professionals to run the center. Cost is another factor.

"Running our own data center means higher operating costs, especially in staffing and rentals, as we operate in the central business district," he said.

Locating the center on DEC's premises also means that DEC's staff will be on hand to provide prompt service, including backup systems if necessary.

Local shipping business practices, Le Point said, make that level of IS help not just a convenience, but a necessity.

"Shipping in Asia is a very different game. Here, free onboard shipping is a common practice, with the shipping cost paid by the importer," Le Point said. "Therefore, it is critical to get the documentation and bill of lading issued to the exporter as quickly as possible so that they can get paid. In fact, many exporters here are pushing shipping lines for immediate dispatch upon loading."

Singapore will be CGM Asia's regional data center, serving about 200 agents in Indonesia, the Philippines, Malaysia, Thailand, South Korea, Hong Kong, Japan and Taiwan.

The seventh largest shipping company in Europe, CGM Asia has made Singapore its transshipment center for its global and Asian traffic. It is anticipating a massive increase in the amount of container cargo through Asian ports next year. Gerard Maupome, managing director of CGM Asia, said he expects a "10- to 12-fold increase of CGM Asia traffic through this region.

"This means that we have to operate our [electronic data processing] center 24 hours a day all year round," he added.

Lim writes for Computerworld *Southeast Asia.*

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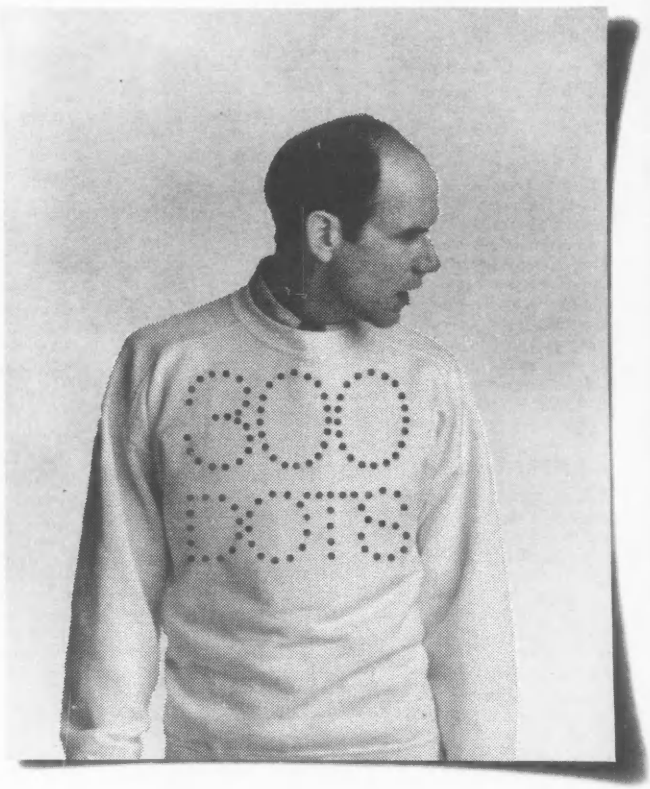

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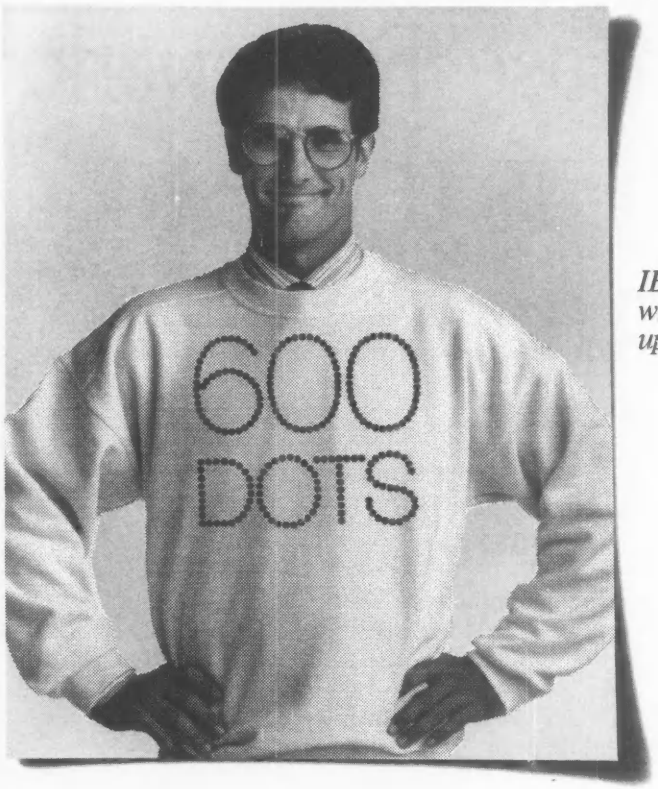

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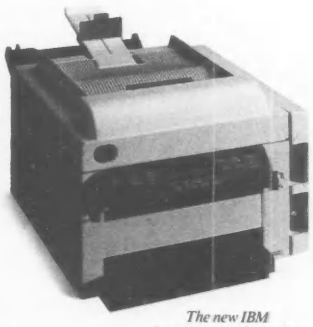

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September 11, 1991

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Ex-IBM pioneer ignites Sparc venture

R. Andrew Heller's computer firm enters desktop systems high-end market in Big Blue style

BY J. A. SAVAGE
CW STAFF

CAMPBELL, Calif. — While there is no love lost between IBM and R. Andrew Heller, former head of development for the RISC System/6000 reduced instruction set computing (RISC)-based workstation, Heller's new computer company is partially shaped by IBM's way of doing business.

In May 1990, on the rebound from IBM, Heller founded Hal Computer Systems, Inc. Hal — named after the computer in Stanley Kubrick's film classic, *2001: A Space Odyssey*, with an added tip of the hat to IBM (hint: what letters precede I, B and M?) — is developing desktop systems aimed at the high-end commercial market, with an emphasis on mainframe-style software and support.

Heller *says Hal's strategies are not limited to IBM's*

Originally underwritten by bank loans, the start-up got a hefty boost and a clout-carrying ally in August 1991, when Japan-based Fujitsu Ltd. invested $40.2 million in return for an equity stake and certain Asian distribution rights to the forthcoming product lines. Fujitsu's exact ownership interest has not been disclosed; however, an existing agreement caps its holdings in Hal at 44%.

Despite the occasional dig at IBM's "arrogance," Heller acknowledged that some of what Hal is attempting to do mimics Big Blue. "IBM does certain things quite well," Heller said. "They have a clear focus on quality and service."

Art Goldberg, vice president of sales and marketing at Hal and a former IBM executive, said that much of what his company is doing "sounds like what we did with the RS/6000. We'd like to think we can take that a step further."

However, Goldberg said, as the fledgling firm's strategies unfold and its products roll out, resemblances will not be limited to IBM. Hal also looks like Tandem Computers, Inc., he said, in that it is attempting fault tolerance. "Sometimes, too, we look like Sun because we are innovative and moving fast," he added.

Building a better beast

However, while Hal executives like to equate parts of their business with Sun Microsystems, Inc. and are basing future computers on Sun's Scalable Processor Architecture (Sparc), they are also intent on distancing the firm from the rest of the Sparc community.

"We are different from them," Goldberg said. While Sparc-based clones and compatibles vendors usually buy their CPUs from a manufacturer that has implemented Sun's RISC design through Sparc, Hal is designing special multiprocessing Sparc chips through Fujitsu that will not be sold on the merchant market.

Heller said he picked the Sparc architecture not for its technical efficiency but for its simplicity. According to Heller, simplicity is an attractive characteristic in that it makes it easier to build in differentiation, and the Sparc community is "more willing to accept extensions to its architecture" than are developers on other platforms.

"Sparc is the least regulated architecture" in the industry, Heller said. "The RS/6000 is the most regulated. We looked at [Hewlett-Packard Co.'s] architecture, Mips Computer Systems' architecture and the RS/6000, but all of those were owned by the vendor."

Heller likened the Sparc world to "the elephant and flea," where Hal is the flea. However, he noted, "In an environment where control is open, you don't suffer from being the flea."

In addition, unlike most Sparc compatibles, Hal appears to be hewing to proprietary lines. Not only will its CPUs not be sold, but anything outside the public interface will remain proprietary, according to Heller. At that level, however, any application that runs on Sparc-based computers still runs on Hal machines, he said.

The firm is not yet ready to detail its future offerings or to project an estimated first ship date. However, Heller said that one product currently under development is "mainframe-capable" hardware in a deskside package.

"It's easier to make good hardware," he said. "The software problems are larger and more difficult." Heller added that Hal has internal groups working on systems management packages and other mainframe-style software, as well as cooperating with third parties for software development.

Continuing to be evasive about upcoming products, Heller said Hal is not building up to mainframe level. "We're already at that," he said. "We're trying to build well past mainframes."

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COMMENTARY

Nell Margolis

A cautionary multicultural tale

Seventeen years ago, when the phrase "multinational corporation" was newly in vogue, a business scholar made a startling suggestion and told a harrowing tale.

The suggestion went beyond "contrarian" to the very rim of weird: While his fellow writers on the international business scene focused earnestly on the potential problems of irreconcilable currencies, disparate legal systems and the hardship of telephone communication across time zones, this particular writer dismissed fiscal, legal and temporal agility as necessary but insufficient.

The truly successful multinational players, he said, would be those who mastered the nuances of the various cultures into which their new ways of doing business might lead them.

To illustrate his point, he recounted the following story. As I recall it, the tale was true, but names had been deleted to protect the mortified:

A major U.S. manufacturing company based in a Midwestern state won a hotly contested, highly lucrative contract with an equally august South American firm. With the deal announced, the details hammered out and the champagne corks already popped, the U.S. company sent one of its senior executives down to the new partner's headquarters to sign the final papers — an act that both parties saw as purely ceremonial.

Keenly aware of the significance of the deal to both companies, the U.S. executive — let's call him U.S. — and his South American counterpart and personal host — let's call him S.A. — prepared for several days of high corporate splendor. S.A. packed the days with educational presentations and entertaining side trips. In addition, as he would have done for the highest ranked dignitary, he arranged for lodging in a grand hotel and hosted an endless round of sumptuous meals at his dining club.

And that's where things began to go south. U.S., knowing that back in the heartland, he would have put an honored guest at ease by inviting him to his home for a big dinner with the family, wondered why the same courtesy wasn't accorded him. It began to gnaw at him that S.A. was apparently holding him at bay. And U.S. wasn't altogether skilled at hiding his feelings.

S.A. was baffled by U.S.' increasingly obvious lack of appreciation for the gala visit on which so much attention had been lavished. Rooted in a formal and deeply religious culture, S.A. would never have considered the idea of taking U.S. home to meet his family, much less to dine with them. To do so in his world would have been not only the height of business discourtesy but also an insult of huge proportion to the family whose home he would have defiled by merging it with business. As U.S. went from ungrateful to insolent, S.A. went from baffled to furious. And S.A. wasn't altogether skilled at hiding *his* feelings . . .

By the time the contract-signing ceremony rolled around, the two "ambassadors" were no longer on speaking terms. Partnership was out of the question. The South American contract eventually went to a European conglomerate.

Could this happen today? You bet, says British management consultant John Mole — now more than ever. The consultant who took his prescient pen in hand 17 years ago might be staggered to see the legal, fiscal and, heaven only knows, technological changes that have whipped the world into a global marketplace virtually overnight. But when it comes to lack of cultural awareness, he wouldn't find the world much altered.

Sure, it's been a while since we've tried to sell the Chevy Nova in Spanish-speaking countries, where the car's name means "Won't Go" — but just five days ago, a Washington lawyer told me a story about a colleague of his who, dispatched to a recently open Eastern European country to seed business relations, prepared for everything except the fact that the phone books would be written in a language he couldn't read. Yes, Mr. Mole, we still need your observations.

Even more, we need your book. Mole's *When In Rome — A Business Guide to Cultures & Customs in 12 European Nations*, is out in a first U.S. paperback printing just in time for Europe '92 — and, just in time for holiday shopping. Smart CEOs will buy in bulk and attach a copy to each employee's holiday greeting card.

With little time spent on academic analysis, Mole cuts to the chase after cross-cultural clues. He walks the reader through the various components of the European Community, throwing out tips under such headings as Labor Market, Teams, Meetings, Upward Mobility, Communication, Women, Etiquette, Socializing, Punctuality and Language.

Mole got his information, he says, from interviews with some 200 practicing business managers, "most of them expatriates."

Their mistakes could save you a few.

Margolis is *Computerworld*'s senior editor, industry.

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INTERNATIONAL BRIEFS

Open systems

▶ In the past year, **Andersen Consulting**'s advice has helped speed bread to Moscow, ship cars out of Poland and send data across cellular telephone lines in Hungary. Last week, the Chicago-based consulting firm took its efforts in Eastern Europe down a new track: Under a three-year, $6 million contract, Andersen said, it will design and build a nationwide goods routing system for the **Hungarian State Railway**.

RISC-averse?

▶ Sales of **IBM**'s **RISC System/6000** reduced instruction set computing (RISC)-based computers are slow in **Japan**, according to a recent report in the Asian business press. Sales have bogged down in light of a scarcity of applications for the machine and its inability to handle a relational database, said Tetsushi Hiruma, general manager of international sales planning at **Toppan Moore Systems Ltd.**, an authorized RS/6000 distributor in Tokyo. And it isn't just the RS/6000 that is affected. RISC vendors in general, Hiruma said, are getting a lukewarm reception in Japan.

Bullfight

▶ The head of **Bull UK** has made an aggressive call for an independent, European-owned computer industry capable of competing with U.S. and Japan-based firms, according to a recent report in the UK business press. "Ultimately, Europeans — businessmen and policymakers alike — must decide whether Europe is merely an open space for unchecked market forces or a distinct economic entity which sets its own rules, as in the U.S. and Japan," said **George McNeill**, chief executive officer of the Groupe Bull subsidiary. Bull is working with several other European computer firms — but not, conspicuously, with UK-based, Japanese-owned **ICL** — to promote the so-called **European Nervous System**, a pan-European information technology infrastructure aimed at linking public sector agencies.

Can't beat 'em? Buy 'em

▶ Chicago-based **Comdisco, Inc.** has acquired UK-based **Systems On Site**, a 7-year-old firm specializing in mobile disaster recovery for IBM midrange equipment. The former Comdisco rival will retain its name and will work in conjunction with Failsafe ROC, a fellow UK-based Comdisco subsidiary.

French correction

▶ French state-owned telecommunications firm France Telecom has signed a 1991-1994 business plan with the government under which it will trim debt, cut prices and spend an estimated $26.7 billion to modernize its network and expand abroad. The carrier said the plan aims to cut a 1990 end-of-year debt of $21 billion by up to $2.7 billion by the end of 1994. In addition, it will fix tariffs annually at three percentage points less than France's gross domestic product deflator and invest some $1.5 billion to $3 billion in overseas operations.

EC computer law campaign launched in UK

BY RON CONDON
IDG NEWS SERVICE

LONDON — A campaign to bring wider consultation to bear on the framing of computer-related law in the European Community (EC) has been mounted in the UK. The campaign has the support of computer user groups across Europe and aims to help legislators produce a harmonized set of laws across the EC.

If successful, the campaign will affect both individuals and companies and will cover a broad range of subjects, from data protection to system security.

The European Information Market working group is led by honorary President Emma Nicholson, an outspoken member of Parliament who played a major role in pushing through the Computer Misuse bill in the UK last year.

"EC directives are put together by harassed, overworked, very intelligent people whose base of knowledge is probably literary and not numerate," Nicholson said earlier this month.

At the moment, she said, the system is too rigid and leaves little room for consultation after the draft directive on any subject is produced.

"European directives come out in draft form, but the very word 'draft' means they are 90% as they will be for good," Nicholson said. She added that with the complexity of the information technology market, expert soundings were needed at a much earlier stage.

Nicholson claimed she has broad support in France, Germany, Italy and other EC states for her aims, and that working parties similar to the UK group will be in place across the EC within three months. "We cannot afford to wait in this most important field," she said.

Condon is London correspondent for the IDG News Service.

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EXECUTIVE CORNER

Technology Solutions names new director

The board of directors of **Technology Solutions Co.** late last month elected **Melvyn E. Bergstein** vice chairman and director. Prior to joining the Chicago-based systems design and integration firm earlier this fall, Bergstein served as senior vice president at Computer Sciences Corp., where he helped spearhead the $3 billion General Dynamics Corp. outsourcing deal that reportedly set a new high watermark in the annals of commercial outsourcing.

Edward Iacobucci, who was a member of the original OS/2 design team at IBM, was elected last week as chairman of the board of directors of Coral Springs, Fla.-based **Citrix Systems, Inc.** — the company he co-founded three years ago after an 11-year career at IBM. Citrix develops and markets Intel Corp.-based multiuser operating system software geared toward users who need to migrate mainframe and minicomputer business applications to an industry-standard microcomputing platform.

Iacobucci, who formerly manned the post of vice president and chief technology officer, was also named to the new position of vice president of strategy and technology.

Summit, N.J.-based **Unix System Laboratories, Inc. (USL)** has selected **Roel Pieper** to replace outgoing President and Chief Executive Officer **Larry Dooling,** who is retiring from the firm. Prior to joining USL in 1990, Pieper spent nine years at Software AG of North America, Inc., most recently serving as senior vice president and chief technical officer. Dooling, who guided USL from an **AT&T** business unit to a stand-alone corporation, will remain with the firm for an unspecified period of time as vice chairman. He will assist chairman **Robert Kavner** and Pieper with strategic planning.

IBM and wholly owned subsidiary **Metaphor Computer Systems, Inc.** last week announced that former Metaphor CEO **David E. Liddle** has been appointed to the newly created position of vice president for new systems development.

In his new position at IBM, Liddle will work to establish and expand strategic programming alliances that complement the company's internal development efforts on OS/2(a), AIX(a), advanced object technology and future Personal Systems software platforms.

Technology comes first

CONTINUED FROM PAGE 89

would experiment," she said. The company relied on these technically savvy users to find uses for its advanced products and disseminate information to other users. This word-of-mouth advertising was important to the fledgling firm, Myers said, because "we didn't have a name, and we didn't have a whole lot of money behind us."

However, it is the company's appeal to power users that has also created a die-hard following for its products. Skilled technical support, regular product updates and products that provide the flexibility a knowledgeable user requires all add up to a user loyalty many companies would love to claim.

Myers has overseen Quarterdeck's impressive growth

American Airlines' decision to go with the Microsoft product provides an example of the competitive pressures Quarterdeck faces. But while competition from larger vendors is an issue, Charlotte Walker, CEO at Labe, Simpson and Co., said Quarterdeck has a history of staying enough ahead to keep users coming.

Time is of the essence

In addition, Walker said, Quarterdeck's products have arrived at the ideal time.

"They produce memory management products and application integration products at a very, very fortuitous time when the PC installed base is maturing and when users are trying to get the maximum out of their PCs," she said.

According to Walker, the introduction of Windows may have even aided Quarterdeck. "Windows created a memory management problem for the end user," she said. Quarterdeck's QEMM product, long a software best-seller, is one solution to that problem.

For her part, Myers said she is unperturbed by competition from the big vendors. "We're not sitting still," she said. "It's all a part of how you can take advantage of the technology as it comes out, and can you stay ahead. That's who we are, actually."

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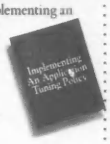

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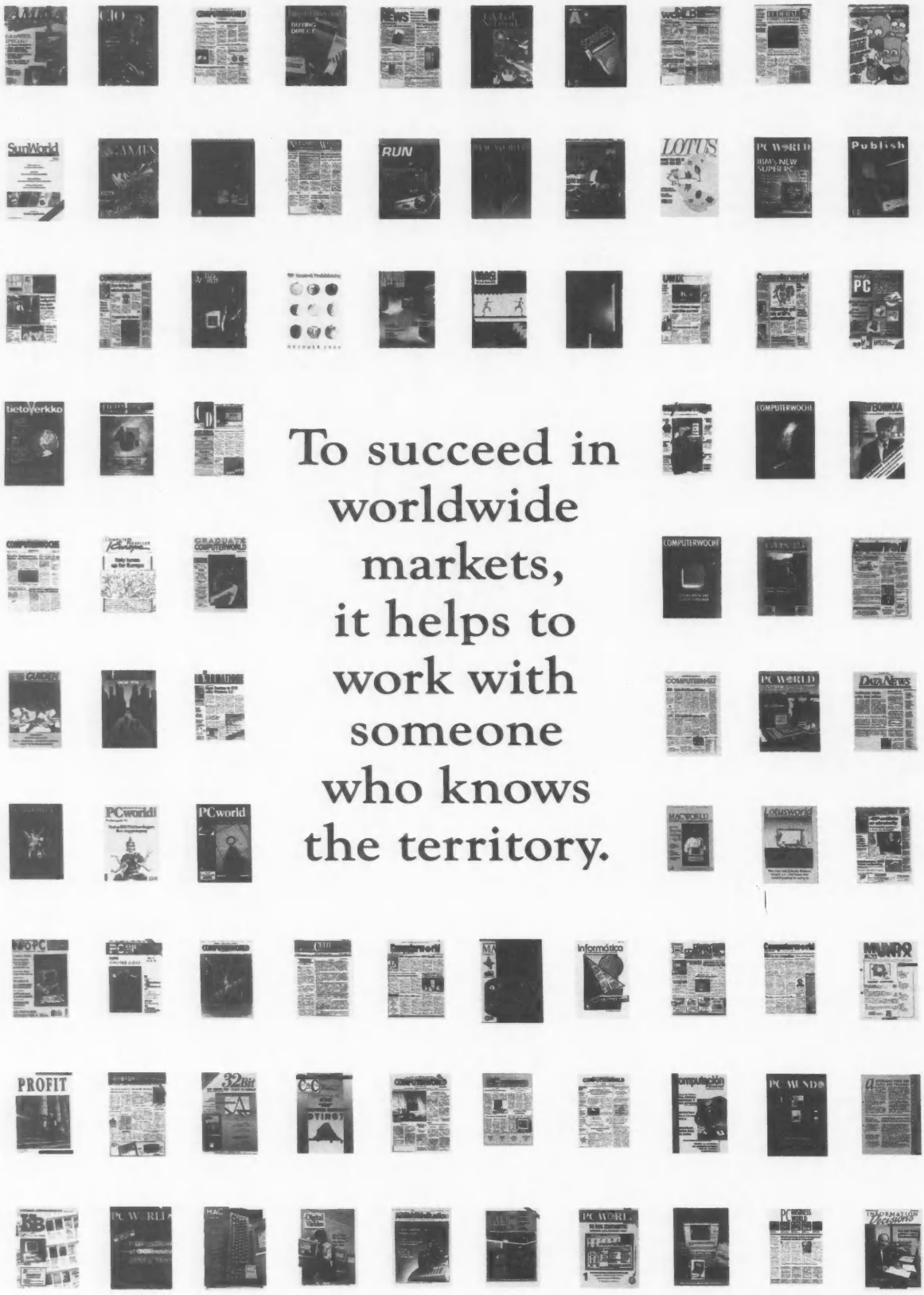
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A little haggling never hurt anyone

But what you can negotiate depends on your skills and level of experience

BY ALAN RADDING
SPECIAL TO CW

A job candidate recently landed a high-level information systems management position at a company that was going through a turnaround process. The salary was advertised at $85,000, but the candidate won the job at $115,000 plus a guaranteed bonus.

How did he do it? He negotiated the increase by convincing the company that his skills and experience were a perfect match for its needs and that he could hit the ground running.

Negotiation jackpots like this are rare, especially today "when people are happy just to hold onto jobs," says Lee Silver, president of L. A. Silver Associates, Inc. in Framingham, Mass., the executive search firm that handled the manager's job search. Still, recruiters and IS managers say that in many cases, a little haggling is a good idea.

How much you negotiate and what you negotiate for definitely depends on where you are in your career development, says Don DeCamp, vice president at Romac and Associates, a national recruitment firm based in Portland, Maine. "There are two main pieces to a person's career: the skills development part at the front end and the [return on investment] on the back end," he says.

DeCamp advises candidates in the skills-building phase of their career to negotiate things that will help them boost their skills. Instead of asking for more salary, DeCamp suggests focusing on issues such as tuition reimbursement, professional education and the opportunity to participate in leading-edge projects.

"Education, training, tuition refunds — it's what we call an invisible raise," Silver says.

It's also the kind of concession that companies may find easier to grant. Bill Murray, director of IS at Tribune Broadcasting Co. in Chicago, says he finds requests for training easier to satisfy than requests for higher starting pay. He can reimburse an employee for training without dipping into his tight salary budget.

Bargaining for education won't always work. Some IS shops already have formal education programs in place, preempting any negotiation.

Negotiating for bigger and better compensation packages is best attempted only when you have gathered considerable experience and have reached the upper-middle or high levels of the profession. Even then, a well-planned strategy is a must. Here are a few hints on how to proceed:

• **Probe for signs of flexibility.** Try to get an idea during initial conversations of how open-ended the employer's definition of the position may be and how receptive he is likely to be to counter-proposals.

Many shops establish rigid salary ranges based on the job description and the candidate's years of experience and specific skills. Your best strategy here is to try to nudge up the job description and present your skills and experience so you qualify for the highest end of the salary range.

• **Build your case on professional issues.** "You need to show how you meet or exceed their requirements in the areas of competence and compatibility," says Peter Arnold in Wellesley, Mass., author of three books on career development. In short, you need to prove you can produce more results fast enough to merit special consideration and extra pay.

• **Don't plead need.** Don't base your case on personal need or desire for more money, Arnold advises: "Stay away from need and greed. Talk value instead."

"We don't think personal need is a viable issue. Everybody needs or wants more money. We try not to let that be brought up," says Allen Head, information service development manager at Universal Flavor Corp. in Indianapolis.

• **Be patient.** Hold off on salary negotiations until an offer has been made. In the early interviewing stages, employers will feel out the candidate on salary, trying to determine if the candidate is in their ballpark. The job candidate needs to show flexibility without being evasive.

DeCamp recommends taking this approach to the salary question: "I understand this job has a salary range of X to Y, and my expectations are along those lines." In subsequent negotiations, you can shoot for the high end of the range.

• **Don't get caught off guard.** When you get a job offer, it is best to try to get the employer to make the first salary proposal.

Sometimes, however, the employer will directly ask what you are seeking. If you can't put off the question, DeCamp recommends an opening position along these lines: "As you know, my current salary is X. The accepted industry figure is a 10% to 12% increase when one takes a new job, so I would expect something in the area of Y to Z." Adjust the figure up or down, depending on the situation and the market demand for your particular skills.

• **Be realistic.** "An expectation of a 10% increase over their current salary is in line," says Brian Ellis, director of MIS at Brunswick Bowling & Billiards Corp. in Muskegon, Mich.

Such an increase is inappropriate, however, if the job candidate is moving from a high expense region such as San Francisco or New York to an area with a significantly lower cost of living. "If they are coming from a high-rent area to an area such as ours, they need to lower their expectations," says Ron Clift, vice president of information services at Pacific Standard Life Insurance Co. in Davis, Calif.

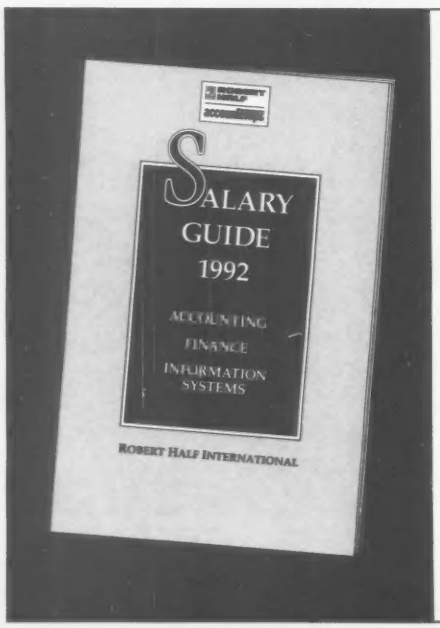
Radding is a free-lance writer based in Newton, Mass.

Rock the boat

Current employees — no matter what level — generally have the least amount of luck bargaining for more money.

One reason for this is that corporate policy usually restricts the opportunity to negotiate salary. For example, most organizations conduct periodic formal reviews and peg raises to performance ratings.

Of course, those who don't ask don't get, and some bosses say employees are too shy about raising the subject of money. "Employees should negotiate with me, but they don't. They're afraid to rock the boat," says Bill Murray, director of IS at Tribune Broadcasting Co. in Chicago.



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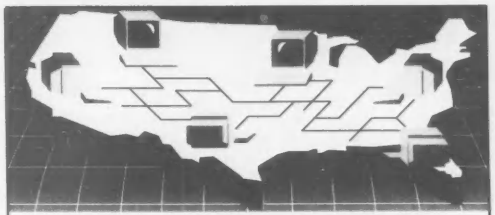

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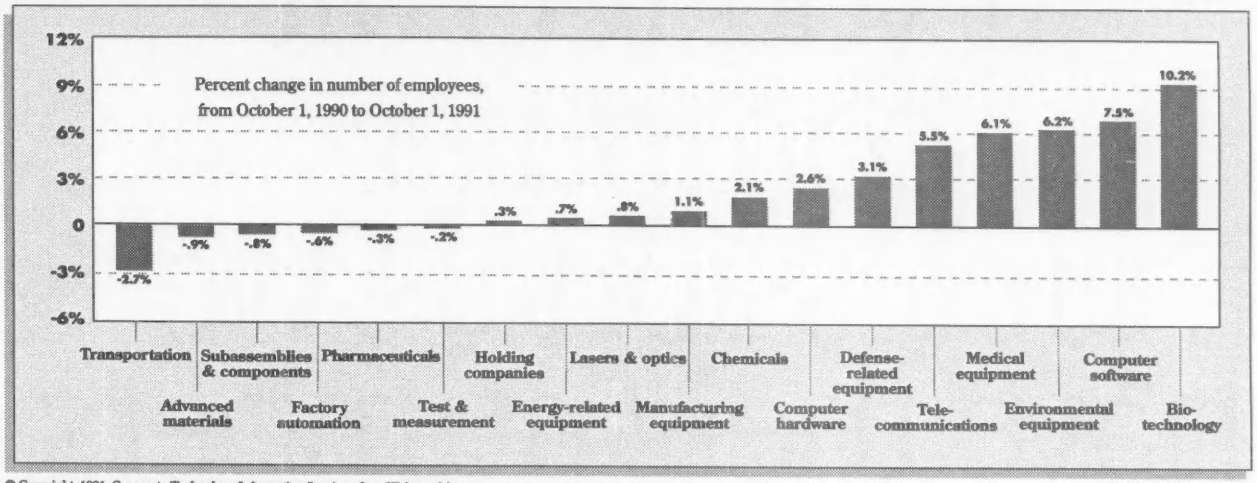

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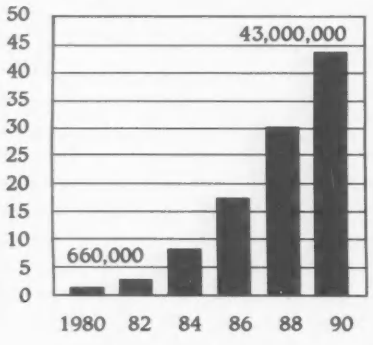
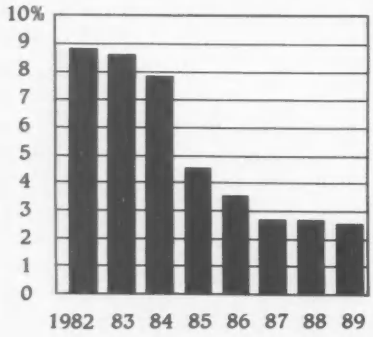


Fewer campus freshmen are choosing computer careers**



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COMPUTERWORLD

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Sources: *International Data Corporation **American Council on Education

MANAGING YOUR CAREER

Glen Knight

If you want to manage, start with yourself

Many IS professionals fail to make the transition to management — not because they wouldn't be good at it, but because they didn't think ahead. The time to prepare for a management job is not when it's handed to you, but while you are a technician.

Your first priority is to decide whether you actually want to be a manager. That sounds simplistic, but it's an important consideration. Many people are attracted to management by the challenge, personal growth, status and money. Many fail to consider some of the downside factors — politics, personnel problems, numerous meetings and long hours — until they are facing them on a day-to-day basis.

If you know you are cut out to be a manager, and those challeges don't faze you, you can start grooming yourself right now for the job you eventually want to hold. Here's how:

Step 1. Plot your path. For example, an application programmer may decide to reach a career goal of chief information officer by first becoming a project leader, then a programming manager and ultimately an information systems director.

Set a target date for reaching each stage. Putting your goals into such concrete terms will help keep you on track and alert to the need for action when the time is appropriate.

Plans must be flexible, of course. Real life doesn't always follow a preset course. Review your plan occasionally and make adjustments where necessary, always keeping the end goal in sight.

Step 2. Talk to your manager after you have set your goals. This will help in two ways. First, you may be able to find out whether the manager has plans to move up, which could possibly create an opening for you.

If that doesn't seem to be in the cards, you'll know that your current job may be a dead end. Second, your manager may be able to help you evaluate your strengths and weaknesses as a potential manager.

Step 3. Find a mentor who can help you develop your management skills. If practical, a mentor should be an immediate supervisor.

If that's not a possibility, choose another manager at an equivalent level of authority who is well respected within the organization. If you spell out career goals clearly, a mentor can be helpful in developing a tactical plan and influential in a promotion decision.

Step 4. Take classes in supervisory and managerial education. These courses may be offered by your employer, local businesses and community colleges.

Courses to consider are introduction to management, introduction to finance, assertiveness training, time management, project management, interpersonal skills, writing skills and speaking skills.

Additionally, personal computer skills have become imperative for managers. Managing requires writing (word processing) and financial work (spreadsheets).

Step 5. Learn the business. IS managers cannot be successful unless they understand how information technology can help the organization achieve its goals.

One way to obtain this information is to visit user departments and find out what they do. A department that has been involved in projects with IS is an excellent place to start.

Step 6. Develop a network of contacts. Successful managers may not always know the answer to a problem, but they do know where to get the answers and which people have the skills to get a job done.

> OFFERING ASSISTANCE will gain you a reputation as a doer and a problem solver who is willing to tackle more than just your own immediate job.

Helping other people with their projects and problems will help expand your network. Furthermore, offering assistance in this fashion will gain you a reputation as a doer and a problem solver who is willing to tackle more than just your own immediate job.

Other ways to develop a network include giving training sessions and volunteering for committees. If the opportunity arises, offer to chair a committee. This is a good way to acquire leadership skills.

Step 7. Work on your attitude, emphasizing the positive and learning the value of team effort.

Successful managers take a "can-do" approach to challenges. Specifically, they believe no project is insurmountable.

Instead of looking at why an idea or concept won't work, they find ways to make it work. These individuals commit themselves and their staff to the success of the organization.

Team building is a critical management skill for any manager, but it is particularly important within the IS function, which is increasingly being asked to work closely with business units.

Step 8. Observe the dress of other managers in the organization. A person's business wardrobe reflects his or her attitude and goals. Polo shirts and jeans do not project a management image.

With a detailed plan in place, you can properly prepare yourself for the switch from a technical to a management role. When the time comes, the transition will be smooth.

Knight is director of IS at Washoe Medical Center in Reno, Nev. He is also a professional speaker and seminar leader.

IS managers and corporate hiring managers: If you have a career issue you'd like to write about, please fax your idea to Cathy Duffy, (508) 875-8931.

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Director of Computing Services

Indiana State University is a multi-vendor campus in both PC and mainframe computing with a campus network currently being developed. The **Director of University Computing Services and Facilities** is responsible for academic and administrative computing needs of the campus. Staffing: 40 professional/support staff positions.

Responsibilities include: leadership for strategic planning; recommending policies/procedures; integration/oversight of computer resources/services; coordination of computing activities (academic, administrative, service, maintenance); assist in the coordination of library information services and telecommunications; budget preparation/management; identification/addressing of campus computing needs; development of grant proposals.

Desired qualifications include: successful management experience with both academic and administrative computing in a higher education environment; an earned doctoral degree preferred; strong leadership and communication skills; strong interpersonal skills; creativity in developing innovative computing applications.

Position available Jan. 1, 1992. Submit a letter of application and resume by Dec. 7, 1991 to: **Robert Jefferson, Chairperson, Search Committee, Telecommunications Dept., Indiana State University, Terre Haute, IN 47809. (812) 237-4183**

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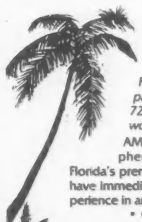

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Product Manager - Tax Department. Manage, direct and coordinate six to eight subordinate systems analysts/associates and tax consultants in the design, programming, maintenance and enhancement of the firm's tax practice software including federal, state and foreign tax and fixed asset management software written in RBasic, using Revelation database on an MS-DOS Operating System; consult with senior management to define boundaries and priorities of projects, equipment acquisitions, and information requirements; manage development of networking and print production software/hardware environment, system testing and troubleshooting; prepare project status reports for senior management; interface with clients to define their needs; manage studies of client problems and recommend solutions; direct implementation of information systems solutions at client premises; oversee systems development studies; participate in subordinate evaluation and system budget planning; confer with subordinate personnel to provide technical advice; manage staff training of newly hired subordinates. Bachelor of Science in Computer Science and 2 years experience as Product Manager Tax Department or 2 years experience as Systems Analyst/Associate required. Two years experience required in the capacity of Systems Analyst/Associate must have involved the development of domestic, state, fixed asset management and foreign tax software written in RBasic, using Revelation database and MS-DOS Operating System. Previous experience must have been in a certified public accounting firm. 40 hours, 8:30 a.m. to 5:00 pm., $47,000 per year. Must have proof of legal authority to work permanently in the U.S. 40 hrs/week, 8 am to 5 pm, $59,000/yr. Send resumes to ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, Illinois 60605. Attention: M. Zielinski, Reference # V-IL-4049-Z. NO CALLS. AN EMPLOYER PAID AD.

Computer Applications Engineer - To initiate, investigate, and propose new engineering methods to improve the ODD (Office Dependent Database) generation process; design and implement automated tools to improve the quality of the above process and its products; chair the Test Environment Process Committee; coordinate and conduct process improvement team meetings; develop working plans for the Test Environment; manage and track process related action items; coordinate working level activities; track and resolve process deficiences; perform root cause analysis, recommend process improvements; audit quality improvement projects; initiate benchmarking activities; and provide a source of quality methodology expertise. Requires a PhD in Computer Science with a background in software engineering, exploratory design methodologies, CASE, SDE, and conceptual modeling, knowledge of applied AI, KBS, relational databases, and object orientation: experience in large software development projects, LAN, computer graphics, and SUN; proficiency in LISP, Prolog, CPSS, Smalltalk, Pascal, Modular-2, Fortran, Ada, and C programming languages. Applicant must also have two years in the job offered or two years as a teaching assistant or instructor in Computer Science at a college/university. 40 hours per week, (work schedule: 8:00 a.m. to 5:00 p.m.). Salary is $62,000.00 per year. Must have proof of legal authority to work in the U.S. Send resumes to: Illinois Department of Employment Security, 401 South State Street - 3 South, Chicago, Illinois 60605. Attention: Anna B. Smith. Reference #V-IL-3540-V. NO CALLS. AN EMPLOYER PAID AD.

ASSISTANT DATA CENTER DIRECTOR For Florida Department of Labor and Employment Security. Position No: 05744. Salary Range: $35K - $59K.

The Florida Department of Labor and Employment Security is searching for an individual to join our information resources management team reporting to the Data Center Director.

The successful candidate will be responsible for managing the Systems Design and Programming group consisting of 80 professionals. The individual must possess strong management and interpersonal skills. Experience in project management for application development, designing automated systems, programming and establishing standards and procedures is required. Application of CASE products, ISDM, and DB2 is highly desirable. Background should include large mainframe and micro-computers operating in a cooperative processing environment.

Minimum qualifications for this position is a bachelor's degree from an accredited college or university and a minimum of five years experience in data processing, two years of which must have been in a management capacity.

Individuals interested should submit a resume and a State of Florida Employment application no later than 11/29/91 to: Florida Department of Labor and Employment Security, Caldwell Data Center, Room G-6, Caldwell Building, Tallahassee, FL 32399-0202. Attn: Patty Strickland. (904) 488-4230. The State of Florida is an Equal Opportunity/Affirmative Action Employer.

CAD Layout Verification Engineer responsible for the design, specification, planning, implementation, testing, & user support of CAD tools for CMOS VLSI layout verification used for LSI device modeling & extraction of electrical & geometrical information from integrated circuit designs. Technically research, through literature & as a liaison to Design Engineers, the problems & suggested solutions that are associated with this task utilizing knowledge of microprocessor architectures & integrated circuit layout tools such as MAGIC, DEVMD, & SUPREM. Propose & implement, through software, a means of providing the required chip data. Design, develop & support VLSI layout verification programs. Specific tasks include research & programming applications, written in the "C" programming language for VAX/VMS & UNIX operating systems, & introducing new programs & extending present ones to analyze clock skew, IR drop, electromigration, & similar electrical phenomenon experienced in high performance, custom VLSI designs. Research new engineering design rule checks such as well-plug contact ratio, metal continuity, inductance, & contact current crowding. Requirements for this position are: a Master's of Science in Electrical Engineering or Computer Engineering with a concentration in VLSI design & CAD (Computer Aided Design); background in "C" programming language, VAX/VMS, UNIX operating system, CAD tools for VLSI verification, technical research in microprocessor architectures, LSI device modeling, CMOS, & integrated circuit layout tools MAGIC, DEVMD, & SUPREM. Salary: $41,080.00 per year. 40 hr/wk. 8:15am-5:00pm. No exp. nec. If you are interested in, & qualified for the above position, please forward two (2) resumes to: Job Order #2122, P.O. Box 8968, Boston, MA 02114. EOE.

IDMS Megadatabase Senior Systems Engr. for CPA-Mgt. Services Div. employer: IDMS Megadatabase Tech. Mgr. manage programming (software/hardware systems) of over 20 programmers & database administrators (DBA's); oversee several multiple employee work groups, each coor. by assoc. software systems engr; assist work group DBA's & staff w/impact analysis, tech specifications, unit testing, integration testing & acceptance testing & production support of large IDMS based Integrated Student Info. Systems (ISIS) for univ. appl.; assist client DBA's & system support staff w/performance monitoring, sizing maintenance & tuning of complex megadatabase; Min. Qual: Master Technology in Computer Science of info. systems; exp. must include 1) 5 yrs. IDMS complex database analyst & 2) 2 yrs Acct. Mgr., Megadatabase Mgt Systems Development involving SCT ISIS & SIGMA Fed. Fin. Aid adaptation; exp. must involve 1) both design & installation, 2) supervision of DBA's & graduate computer programmers & 3) analysis & design support for high vol. on-line Transaction Processing (TP) using IBM COBOL and Assembler Language in IBM Mainframe System (30XX) for complex Admin. Database Systems; $1,250/wk; M-F; 8:00 am-5:00 pm. Resume to: Michigan Employment Security Comm., 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No. 86391, EQUAL OPPORTUNITY EMPLOYER PAID AD.

Systems Analyst/Programmer to design and develop screens for interfacing in banking and credit union applications, utilizing Sybase relational database in Sun UNIX OS4.0.3c environment. Utilize JYACC'S JAM library functions in C, JPL and CPC. Utilize user interface menus of source code control system (SCCS) commands for changes to files and text; develop and maintain proficiency in technical and analytical tools as defined by company standards. Require Master of Science degree in Computer Science. Master's level coursework must include: a) Database Management Systems Design; b) Application of Database Systems; and c) Evaluation of Information Systems. Demonstrate ability by submitting Master's level project utilizing UNIX operating systems Source Code Control System (SCCS) commands to develop user friendly interface menus facilitating individuals or project control. Must have one year experience in Computer Programming/Systems Administration. 9:00 a.m. to 5:00 p.m. - $730 per 40 hour week. Send resume to 7310 Woodward Avenue, Room 415, Detroit, Michigan 48202. Reference No. 77091. Employer Paid Ad.

SENIOR SOFTWARE ENGINEER 40 hrs./wk., 8am-5pm, $47,000 per yr. Analyze, design and develop Data Communications software for IBM connectivity products from a TANDEM platform (CLX/VLX/Cyclone mainframes) utilizing SNAX/XF subsystems and DSM range of products. Requires Master's degree in Communications Engineering, Computer Science or Electronic Engineering, 1 year experence in job offered or 1 year experience as Systems Analyst. Experience must include work with SNA and X.25 networks. "Employer Paid Ad." Send resumes to: 7310 Woodward Ave., Room 415, Detroit, MI 48202. Refence No. 78791.

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EOE M/F

Computer Applications Engineer -To analyze and define capacity and performance requirements for advanced switching systems involving front-end process of the product development cycle from conceptualization, system analysis to performance requirements preparations. Requires a PhD in Computer Science with knowledge of the diverse telecommunication applications in the International markets and related technologies: including public telephone networks, Data Communication, Integrated Service Digital Network (ISDN), Gateways, Intelligent Networks, Wireless, and Personal Communication Networks. Applicant must also have a background in Advanced Mathematics or a B.S. Degree in Mathematics, including 2 years' experience as a teaching assistant in the Mathematics Department at a college/university. 40 hours per week (work schedule: 8:00 a.m. to 5:00 p.m.). Salary is $59,000.00 per year. Must have proof of legal authority to work permanently in the U.S. Send resumes to: Illinois Department of Employment Security, 401 South State Street - 3 South, Chicago, Illinois 60605. Attention: Anna B. Smith - Reference #V-IL-3553-V. NO CALLS. AN EMPLOYER PAID AD.

PROGRAMMER ANALYST (CONSULTANT) - For computer consulting firm with branch office in Dublin. With minimal supervision will provide programming analysis services in project design, development and implementation of communications, financial management information, commercial systems and sophisticated text processing applications. Develop and implement systems interface including systems database and program design, coding and testing enhancements. Develop, write, code and implement new application programs to meet current and projected client needs. Duties entail work with UNIX*, C, Database Systems Design, Hardware Configuration, SDLC and computer Networking. Must have Master's in Computer Science or Engineering or Math. Experience required is six months in job described or six months in graduate student assisting or systems analysis involving the use of UNIX, C, Database Systems Design, Hardware Configuration, SDLC and Computer Networking. M-F 40 hrs/week, 8:00-5:00; salary $39,000/year; Dublin, OH location. Must have proof of legal authority to work permanently in the U.S. Send resume in duplicate (no calls) to G. Maugeri, J.O. #1260332, Ohio Bureau of Employment Services, P.O. Box 1618, Columbus, OH 43216. *UNIX is a tm of AT&T. EOE.

Senior Systems Analyst: Project Lead responsible for team engaged in design and development of database management systems and software tools for accounting and customer management functions. Team is responsible to meet with users to determine system requirement, design system feature including reports and analysis capabilities, set operational specifications and quality standards, code debug and design test suites, troubleshoot problems as they arise and provide enhancements and modifications to systems as needed. Hardware: IBM/370 & IBM PC; Operating system; MVS, MSDOS. Must be knowledgeable in Cobol, object-oriented programming and development of graphical languages and development of software tools. M.S. (Elec. Engg. (Computers) or Computer Science), 2 yrs. experience, 2 yrs. related occupation (Systems Analyst/Data Base Management), 40 hrs. wk., $35,000.00 yr. Job site & int. Kansas City, MO. Send resumes no later than 12/3/91 to: Division of Employment Security, 421 East Dunklin Street, Jefferson City, MO 65101, ATTN: John F. Scott, Reference J.O. #520234.

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Computer Applications Engineer - To plan, design and implement ISDN call processing software and to take ownership of call processing software modules for future growth; to evaluate and improve the software design and realization processes and to provide consultation and validation for CCITT Q 921 and Q 931 standards. Requires a PhD in Electrical Engineering with a background in distributed software systems, software engineering, computer networks and ISDN protocols, modeling and analytical skills, C, C++, and UNIX, and relational databases. Applicant must also have one year's experience in the job offered. 40 hours per week, (work schedule: 8:00 a.m. to 5:00 p.m.) Salary is $60,000.00 per year. Must have proof of legal authority to work permanently in the U.S. Send resumes to: Illinois Department of Employment Security, 401 South State St - 3 South, Chicago, IL 50605. Attn: Anna B. Smith. Reference #V-IL-3816-V. NO CALLS. AN EMPLOYER PAID AD

DSP Engineer, 40 hrs/wk. 9:00am - 5:00pm, $32,000/yr. Research/development of real-time digital signal processing (DSP) algorithms for communications, speech, high-quality speech compression, text-to-speech and recognition applications. Spectral analysis. Transform theories. High data transfer rate in software. VLSI design. Satellite communications. Tools: C/UNIX; Sun workstation; TMS32OC2x Assembler; IT TMS3203x; DOS; PCs. M.S. in Electrical Engineering as well as one year experience as a DSP Engineer or Researcher required. Previous experience must include: software development for digital signal and image processing; C/UNIX; Assembly, Sun workstation. One research project, on satellite communications required. Apply by resume to: Ms. Pat Ganno, Job Service of Florida, 2312 Gulf-to-Bay Blvd., Clearwater, Florida 34625. Job Order No. 0516979.

Technical Consultant to utilize theories and techniques of relational database modelling to perform simulation engineering application in Microsoft Windows programs. Develop application programs with system simulations and modeling. Conduct operations research and system and statistical analysis in connection with major manufacturing production and operations. Require Master's degree in Business Administration or Computer Science. Graduate level coursework must include: a) Simulation and Modeling; b) Operations Management; c) Advanced Data Structures; and d) Database Management Systems. Must have completed course titled Microsoft Windows Applications Programming. 9:00 a.m. to 5:00 p.m. $648.00 per 40 hour week. Send resumes to 7310 Woodward Avenue, Room 415, Detroit, Michigan 48202. Reference No. 85291. Employer Paid Ad.

Programmer Analyst, 40hrs/wk. 9:00am - 5:00pm, $36,000/yr. Database management, switching circuit theory and computer graphics to develop and create telephone switching databases for office data administration in electronic switching systems. Tools: AT&T 3B2; UNIX/C; UNIX/Shell Script; SQUALL. MS in Computer Science as well as one year experience as a Programmer Analyst or as a Programmer required. Graduate education must include one course in Switching Circuit Theory as well as one project in the software design of user views (forms) map to/from relational databases and on-line screen menu processing using C/UNIX. Must have proof of legal authority to work permanently in the U.S. Send resumes to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, Illinois 60605, Attention: Maxine Counts, Reference #V-IL-4245C. NO CALLS. AN EMPLOYER PAID AD.

Operations Supervisor

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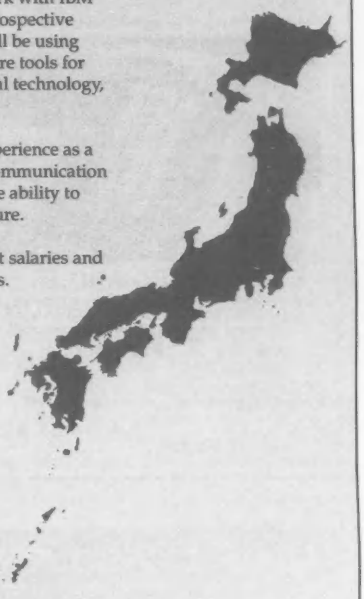

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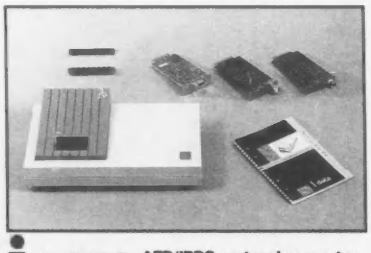

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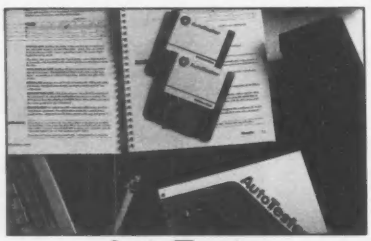

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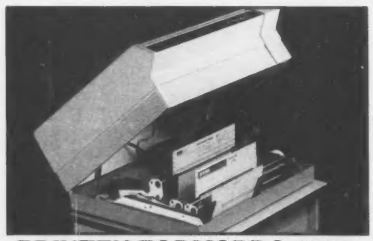

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Hidden costs can undermine savings from outsourcing

BY CATHLEEN A. DUFFY
CW STAFF

It's no secret that lots of organizations are choosing to outsource information systems operations as a way to tighten their belts. Outsourcing saves money by translating capital, space and human resources costs into flat, predictable operating expenditures.

But such arrangements aren't always as much of a bargain as expected. A number of costs, some of which aren't apparent before the fact, can cut into anticipated savings.

Adding it all up

Conversion costs for installation, software transition fees and training can all add up.

For example, White Plains, N.Y.-based Dollar Dry Dock Banks found that employee severance costs — an associated conversion cost — drove the outsourcing costs to a much higher figure than expected during the first year, according to John Maher, first vice president of IS.

Other transitional outlays included terminations of equipment leases and maintenance agreements — which can carry penalties for early termination — and, to a lesser extent, employee retraining, according to Maher. Dollar Dry Dock's agreement involved a six-year pact to use Mellon Bank Corp. of Pittsburgh's data center and systems tools while keeping applications development and support in-house.

Even transferring software licenses over to the outsourcer can be an expense in some cases. Many software vendors view such transactions as a loss of control and will charge very high transfer fees, says Rich Schmitt, president of Schmitt Consulting Group, Inc. in St. Louis, who has witnessed this scenario in several major outsourcing agreements. "This can run into hundreds of thousands of dollars for a large mainframe package," he says.

Contracting costly

Contract management costs are often unanticipated. Depending on how well-managed the customer's data center previously was, overseeing the performance of an outsourcing contractor may require keeping additional middle or upper level management personnel. For large contracts, it's not unusual for the company to have to keep several people, Schmitt says.

According to Michael Williams, former vice president of operations at First City Bank in Houston, such manpower won't come cheap. That's because you'll need top-flight gatekeepers skilled at working with users, along with business technology analysts with systems expertise. You'll need even more supervisory manpower if major new applications are to be developed by the outsourcing vendor, he adds.

Communications expenses can also be prohibitive. In many instances, the communications costs can become quite high if the corporation's remaining data center facilities are clustered in an area where the outsourcing vendor does not have a site or a network node, according to Schmitt. This is something that IS organizations don't always anticipate in terms of costs, he says.

Disaster recovery provisions are something else that companies considering outsourcing don't tend to pay a lot of attention to but should, according to Schmitt.

"What some people find is that the vendor does a very broadbrush thing saying they have disaster recovery," Schmitt says. "Then what they'll say to you is, 'If you want better disaster recovery than that, then it's going to cost you more.' "

There's another kind of dangerous assumption that's actually built into many longer term contracts, notes Fred Cisewski, senior vice president and MIS director at Atlanta-based Banksouth, which has a 10-year agreement with IBM. Long-term deals are generally based on current business growth, Cisewski says.

However, "in entering a partnership, you have to question what happens when these assumptions don't happen. You have to make provisions for downsizing, low growth and high growth," Cisewski adds.

A big 'gotcha'

If all those possibilities aren't covered, says Perry Harris, director of management strategies at The Yankee Group in Boston, "This can be a big 'gotcha.' "

The reason for this is that vendors generally structure contracts so that any growth or drop in technology use does not result in savings to the customer. "If the customer is using 10 [million instructions per second], and their use drops to six MIPS, they don't get any savings," Schmitt says.

Not planning for future technology upgrades can also turn into a problem for IS organizations if no allowance is made for them within the contract. If this isn't covered, "and the customer wants to upgrade to something new, it will cost them more because of the way the contract is structured," Schmitt says.

> YOU'LL NEED to have some top-flight gatekeepers skilled at working with users, along with business technology analysts with systems expertise.

Finally, experts suggest that companies establish the terms for a possible separation before any deal is struck, establishing all the conditions under which a no-fault termination can be accomplished.

"The reason for this is to have the ability to get out of a deal without facing significant penalties. The way some deals are structured, IS customers can get out, but they pay significant fees," Schmitt says.

Free-lance writer Tony Baer contributed to this article.

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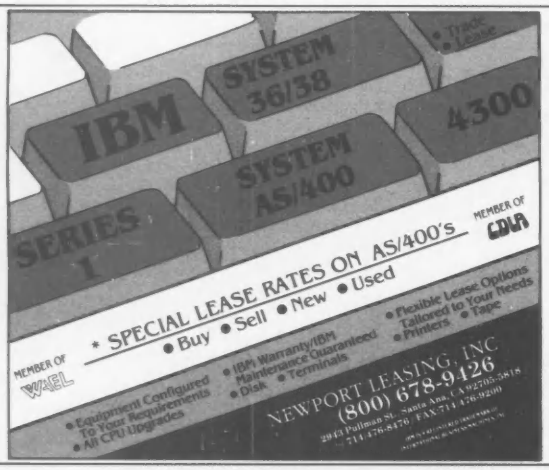
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ANALYSIS IN BRIEF

Microsoftware Industry Overview, Needham & Co., New York, November 1991

Lotus Development Corp. and **Software Publishing Corp.** shares are no longer recommended because translating DOS-based applications to **Microsoft Corp.**'s Windows 3.0 is proving to be harder than predicted.

Investment ratings on both Lotus and Software Publishing have been downgraded from buy to hold. Microsoft was upgraded from hold to buy.

Why change ratings

Companies that have had a Windows orientation from the start, such as Microsoft and **Corel Systems Corp.**, offer the best investment opportunities now. Corel dominates the high-end drawing market with Coreldraw and also has expertise in optical drive software.

Once **Borland International, Inc.** — which is unrated — gets the impact of the Ashton-Tate Corp. merger out of its system, it could fit this profile on the strength of its object-oriented programming (OOP) focus.

Three years ago, Borland's chief, Philippe Kahn, issued a fiat that all future development be done in the company's C++ OOP language. This is paying off handsomely today as sales of C++ are taking off, and Borland's upcoming releases of a new Windows-based version of Quattro Pro and Paradox clearly reflect the power of OOP.

As for its 1-2-3/W, Lotus will no doubt get the product functioning better. However, Borland is likely to make a more impressive entry into the Windows spreadsheet market than Lotus' embarrassing stumble.

Lotus was perceived as coming up short on the legal side with its copyright infringement case against Borland, which did a credible job of arguing its defense. But this lawsuit could go on for years.

KIM S. NASH

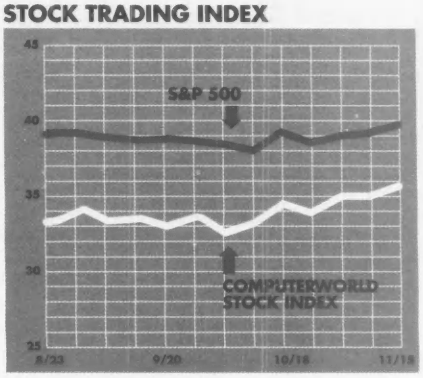
Before and after

Quarterly profit drops did not always precede share price declines

Company	Stock price before reporting quarterly earnings	Quarter profits*	Recent stock price	Value change
Adobe Systems, Inc.	$50.00	↑	$54.50	$4.50
Advanced Micro Devices, Inc.	$10.00	—	$13.13	$3.13
Compaq Computer Corp.	$33.00	↓	$26.13	$(6.88)
Computer Task Group, Inc.	$7.88	↓	$8.25	$0.38
Conner Peripherals, Inc.	$16.50	↓	$15.13	$(1.38)
Digital Equipment Corp.	$56.88	↑	$62.00	$5.13
IBM	$99.75	↑	$99.38	$(0.38)
Lotus Development Corp.	$28.38	↑	$26.25	$(2.13)
Microsoft Corp.	$89.75	↑	$99.88	$10.13
Motorola, Inc.	$59.00	↓	$67.88	$8.88

*Profits for most recent quarter compared with the same period last year.

STOCK TRADING INDEX



THIS WEEK'S HIGHLIGHTS

- Digital Equipment Corp. is expected to announce today an agreement with Microsoft Corp. on office automation software. DEC climbed 5¼ points to 64, and Microsoft jumped 4½ to close Thursday at 99¼. Microsoft had an upbeat meeting with analysts late in the week.
- Comdisco, Inc. reported a sales jump for the most recent quarter, while profits stayed even with the same period last year. Shares of the computer lessor picked up ⅞ of a point to 24.
- Last month's semiconductor book-to-bill ratio rose slightly compared with September's, the Semiconductor Industry Association reported. Texas Instruments, Inc. climbed 1⅛ to 32¼, Intel Corp. inched up ¼ of a point to 43¼, and National Semiconductor Corp. advanced ⅛ of a point to 5⅝.
- Quarterly sales and net income at Software Toolworks, Inc. increased, as did its stock price last week. Shares were up 2½ points to 8⅛.

Computerworld Friday Stock Ticker

CLOSING PRICES FRIDAY, NOVEMBER 15, 1991

TOP PERCENT GAINERS

Aicorp	34.21
Knowledgeware Inc.	11.63
Cognitronics Corp.	10.14
Cambex Corp.	8.79
Dynatech Corp.	8.21

TOP PERCENT LOSERS

Data Switch Corp.	-31.58
Cognos Inc.	-27.55
Micron Technology	-23.88
Tandon Corp.	-20.68
Advanced Logic Research	-19.15

TOP DOLLAR GAINERS

Policy Management Sys.	2.25
Cambex Corp.	2.00
Compression Labs Inc.	1.75
Storage Technology	1.63
Aicorp	1.63

TOP DOLLAR LOSERS

Matsushita Electronics	-4.63
Information Resources	-4.13
Micron Technology	-4.00
IBM	-3.88
Legent Corp.	-3.75

Exch	52-Week			Nov. 15 Close	Wk Net Change	Wk Pct Change
Communications and Network Services						**Off 3.34%**
OTC	12.63	5.50	3 COM Corp.	10.88	-1.13	-9.38
NYS	69.75	55.75	American Info Techs Corp.	60.75	-2.00	-3.19
NYS	40.38	29.00	AT&T	37.13	-1.00	-2.62
OTC	4.13	0.88	Artel Communication Corp.	2.13	0.00	0.00
NYS	56.25	43.00	Bell Atlantic Corp.	45.13	-1.25	-2.70
NYS	56.25	46.13	Bellsouth Corp.	47.50	-1.50	-3.06
NYS	52.88	23.88	Cabletron Systems	42.25	0.00	0.00
OTC	29.25	8.25	Compression Labs Inc.	24.75	1.75	7.61
OTC	5.13	1.63	Data Switch Corp.	1.63	-0.75	-31.58
NYS	21.50	11.00	Digital Comm. Assoc.	16.38	0.63	3.52
OTC	25.25	14.00	Dynatech Corp.	18.13	1.38	8.21
OTC	12.38	5.00	Fibronix Int'l Inc.	6.88	0.00	0.00
OTC	22.50	6.50	FileNet Corp.	18.25	-2.25	-10.98
OTC	3.75	1.75	Gandalf Technologies Inc.	2.13	-0.13	-5.56
NYS	3.88	1.88	General Datacomm Inds.	2.88	0.00	0.00
NYS	33.88	27.50	GTE Corp.	32.25	-1.13	-3.37
NYS	63.00	44.88	ITT Corp.	56.00	0.75	1.36
OTC	31.88	17.88	MCI Commmunications Corp.	27.00	-1.38	-4.85
OTC	14.50	3.25	Microcom Inc.	13.00	-0.75	-5.45
NYS	15.13	4.00	Network Equipment Tech.	13.88	-0.38	-2.63
OTC	15.38	6.25	Network General	13.25	-0.63	-4.50
OTC	18.88	9.63	Network Systems Corp.	15.50	-0.63	-3.88
NYS	44.38	24.75	Northern Telecom Ltd.	44.00	1.00	2.33
OTC	51.75	14.00	Novell Inc.	47.25	-3.50	-6.90
NYS	79.25	67.00	Nynex Corp.	75.38	-3.13	-3.98
NYS	47.00	38.50	Pacific Telesis Group	42.00	-0.25	-0.59
OTC	11.63	4.50	Pennl Data Comm. Ntwks.	7.13	-0.13	-1.72
OTC	43.50	8.50	PictureTel Corp.	36.50	-3.25	-8.18
NYS	17.88	11.13	Scientific Atlanta Inc.	14.88	-0.25	-1.65
NYS	61.25	49.00	Southwestern Bell Corp.	58.75	-2.00	-3.29
NYS	31.50	20.63	United Telecom	22.88	-0.88	-3.68
NYS	40.75	34.00	US West Inc.	35.25	-1.00	-2.76
Computer Systems						**Off 5.46%**
OTC	20.75	6.50	Advanced Logic Research	9.50	-2.25	-19.15
ASE	17.88	12.25	Amdahl Corp.	13.63	-2.50	-15.50
OTC	73.25	34.75	Apple Computer Inc.	50.00	-3.25	-6.10
OTC	9.13	2.75	Archive Corp.	3.75	0.13	3.45
OTC	32.75	12.38	AST Research Inc.	18.00	-2.00	-10.00
NYS	9.38	4.25	Bolt, Beranek & Newman	5.00	-0.38	-6.98
NYS	21.63	8.25	Commodore Int'l	12.88	-1.75	-11.97
NYS	74.25	24.63	Compaq Computer Corp.	24.63	-1.75	-6.64
OTC	2.63	0.38	Computer Automation Inc.	1.50	0.00	0.00
NYS	13.75	6.75	Control Data Corp.	9.25	0.25	2.78
NYS	19.75	9.00	Convex Computer	9.75	-0.75	-7.14
NYS	51.00	26.38	Cray Research Inc.	48.38	-0.13	-0.26
NYS	22.50	3.75	Data General Corp.	14.88	-1.75	-10.53
NYS	4.38	1.00	Datapoint Corp.	2.50	-0.13	-4.76
OTC	36.25	11.75	Dell Computer Corp.	22.25	-2.13	-8.72
NYS	83.00	47.50	Digital Equipment Corp.	61.25	0.25	0.41
NYS	28.88	18.25	Harris Corp.	25.00	-0.50	-1.96
NYS	56.63	27.13	Hewlett Packard Co.	47.75	-0.38	-0.78
NYS	139.75	94.00	IBM	96.25	-3.88	-3.87
OTC	12.00	7.75	Information Int'l	9.25	0.00	0.00
NYS	145.75	106.00	Matsushita Electronics	112.75	-4.63	-3.94
OTC	20.88	7.50	MIPS Computer Systems	8.50	-1.00	-10.53
OTC	29.50	10.75	Pyramid Technology	13.75	-0.50	-3.51
OTC	19.75	7.50	Sequent Computer Sys.	11.13	-0.88	-7.29
NYS	47.25	22.25	Silicon Graphics	43.38	1.63	3.89
NYS	45.88	20.00	Stratus Computer Inc.	41.25	-1.13	-2.65
OTC	38.63	17.75	Sun Microsystems Inc.	24.13	1.00	4.32
NYS	17.63	9.13	Tandem Computers Inc.	10.50	-1.00	-8.70
OTC	4.75	1.25	Tandon Corp.	1.44	-0.38	-20.68
NYS	36.50	23.38	Tandy Corp.	27.75	0.13	0.45
OTC	24.50	7.75	Teradata	20.50	-1.50	-6.82
NYS	6.13	1.38	Ultimate Corp.	1.88	-0.38	-16.67
NYS	7.00	2.00	Unisys Corp.	4.13	-0.25	-5.71
ASE	5.75	2.00	Wang Labs Inc. (b)	2.75	0.00	0.00
Software & DP Services						**Off 3.43%**
OTC	63.00	23.50	Adobe Systems Inc.	53.00	-1.00	-1.85
OTC	12.25	3.50	Aicorp	6.38	1.63	34.21
OTC	59.88	23.13	Aldus Corp.	36.75	-3.25	-8.13
OTC	28.50	15.00	American Mgmt. Systems	18.50	0.25	1.37
OTC	17.25	9.00	American Software Inc.	13.00	-2.25	-14.75
NYS	4.63	1.50	Anacomp Inc.	3.13	0.13	4.17
OTC	18.25	11.88	Analysts Int'l	15.00	0.75	5.26
OTC	13.00	4.38	ASK Computer Sys.	13.00	-0.88	-6.31
NYS	39.75	25.00	Auto Data Processing	37.13	-1.25	-3.26
OTC	62.25	36.50	Autodesk Inc.	38.50	-0.25	-0.65
OTC	35.50	19.75	BGS Systems Inc.	32.75	-1.50	-4.38
OTC	61.00	21.25	BMC Software Inc.	57.50	-1.75	-2.95
OTC	16.00	8.75	Boole & Babbage Inc.	13.13	0.88	7.14
OTC	73.50	24.75	Borland Int'l	67.00	-2.25	-3.25
OTC	20.88	7.38	Cognos Inc.	8.88	-3.38	-27.55
NYS	11.13	6.25	Computer Associates	9.63	0.00	0.00
OTC	17.75	9.00	Computer Horizons	9.88	-0.38	-3.66
NYS	73.25	46.13	Computer Sciences	66.63	-3.13	-4.48
NYS	11.25	7.00	Computer Task Group	8.13	-0.25	-2.99
OTC	22.75	13.00	Comshare Inc.	14.00	-0.25	-1.75
OTC	13.25	6.00	Corporate Software	10.75	-0.75	-6.52
NYS	56.88	35.00	General Motors E (EDS)	53.75	-1.00	-1.83
NYS	18.75	8.50	Goal Systems Int'l	10.00	-0.50	-4.76
OTC	7.00	1.88	Hogan Systems Inc.	4.88	0.00	0.00
OTC	29.25	8.88	Information Resources	21.63	-4.13	-16.02
OTC	15.88	2.63	Informix Corp.	13.50	-2.13	-13.60
OTC	3.63	1.06	Intellicorp Inc.	1.31	-0.13	-8.69
OTC	31.50	11.00	Intergraph	17.25	-2.75	-13.75
OTC	10.50	3.00	Interleaf Inc.	9.00	-0.25	-2.70
OTC	14.88	6.88	Intersolv	13.38	-0.63	-4.46
OTC	43.25	10.50	Knowledgeware Inc.	12.00	1.25	11.63
OTC	45.00	20.25	Legent Corp.	31.75	-3.75	-10.56
OTC	40.75	14.75	Lotus Development	24.75	-1.00	-3.88
OTC	19.00	11.25	Mentor Graphics	15.00	0.75	5.26
OTC	32.00	9.75	Micrografx	13.75	-2.25	-14.06
OTC	100.75	44.75	Microsoft Corp.	95.00	-0.25	-0.26
OTC	16.63	5.50	Oracle Systems	13.75	-2.00	-12.70
NYS	16.25	7.00	Pansophic Systems	16.25	0.00	0.00
OTC	10.00	1.63	Phoenix Technologies	8.50	-0.13	-1.45
OTC	23.50	9.00	Platinum Technology	16.75	-2.25	-11.84
NYS	60.25	38.63	Policy Management Sys.	59.25	2.25	3.95
NYS	31.25	15.00	Reynolds & Reynolds	31.00	0.13	0.40
OTC	15.00	6.75	Ross Systems	13.00	-1.38	-9.57
OTC	27.50	15.50	SEI Corp.	23.25	0.13	0.54
OTC	23.38	13.88	Shared Medical Systems	19.75	0.00	0.00
OTC	35.25	13.25	Software Publishing Corp.	13.75	-0.88	-5.98
NYS	19.25	7.00	Sterling Software	17.50	-0.50	-2.78
OTC	18.25	9.88	Sungard Data Sys.	17.75	0.00	0.00
OTC	35.25	10.88	Symantec Corp.	27.38	-3.38	-10.98
NYS	13.75	4.50	System Center Inc.	12.25	-1.25	-9.26
OTC	37.25	12.50	System Software Assoc.	24.50	-1.00	-3.92
Semiconductors						**Off 5.26%**
NYS	14.25	4.00	Advanced Micro Devices	12.63	-0.38	-2.88
OTC	12.50	5.50	Analog Devices Inc.	8.00	-0.88	-9.86
OTC	13.50	6.50	Chips & Technologies	8.25	0.25	3.13
OTC	59.25	34.00	Intel Corp.	41.00	-2.25	-5.20
NYS	12.50	5.38	LSI Logic Corp.	7.25	-0.13	-1.69
NYS	19.13	8.75	Micron Technology	12.75	-4.00	-23.88
NYS	71.25	45.75	Motorola Inc.	60.63	0.38	0.62
NYS	8.38	3.25	National Semiconductor	5.13	-0.38	-6.82
NYS	47.63	27.00	Texas Instruments	30.13	-1.38	-4.37
OTC	12.25	3.75	VLSI Technology	7.00	-0.63	-8.20
OTC	16.75	5.50	Weitek	6.00	0.25	4.35
ASE	6.75	2.13	Western Digital Corp.	2.75	-0.25	-8.33
Peripherals & Subsystems						**Off 3.31%**
OTC	2.75	1.06	Apertus Technologies	1.31	-0.06	-4.51
OTC	17.00	7.50	Bancitec Inc.	15.75	-0.75	-4.55
OTC	24.75	5.88	Cambex Corp.	24.75	2.00	8.79
ASE	11.75	5.63	Cognitronics Corp.	9.50	0.88	10.14
NYS	31.25	13.75	Conner Peripherals	13.75	-0.88	-5.98
ASE	16.88	7.00	Dataram Corp.	16.63	0.13	0.76
NYS	13.00	4.88	EMC Corp.	8.75	-0.75	-7.89
NYS	48.63	37.63	Eastman Kodak Co.	46.38	1.38	3.06
OTC	11.25	5.00	Emulex Corp.	5.50	-0.13	-2.22
OTC	24.00	14.75	Evans & Sutherland	21.00	1.00	5.00
OTC	9.00	4.00	Iomega Corp.	7.13	-1.63	-18.57
OTC	28.25	12.00	IPL Systems Inc.	18.00	-0.25	-1.37
OTC	6.25	1.63	Maxtor Corp.	5.25	-0.50	-8.70
OTC	18.00	5.50	Micropolis Corp.	7.50	-1.75	-18.92
NYS	97.50	78.25	3M Corp	88.50	-2.50	-2.01
OTC	10.75	5.75	Printronix Inc.	6.00	-0.25	-4.00
NYS	26.75	11.50	QMS Inc.	22.63	-1.25	-5.24
OTC	18.25	9.13	Quantum Corp.	10.13	-1.13	-10.00
NYS	8.00	4.38	Recognition Equipment	6.88	-0.63	-8.33
OTC	11.50	4.88	Rexon Inc.	7.38	0.50	7.27
OTC	19.88	7.13	Seagate Technology	9.25	-0.25	-2.63
NYS	51.50	17.75	Storage Technology	40.00	1.63	4.23
NYS	30.88	16.00	Tektronix Inc.	17.38	-3.50	-16.77
OTC	0.53	0.16	Televideo Systems	0.25	0.00	0.00
NYS	65.50	33.25	Xerox Corp.	63.00	-1.63	-2.51
Leasing Companies						**Off 2.36%**
OTC	16.25	7.50	Amplicon Inc.	14.00	-0.50	-3.45
NYS	29.38	15.50	Comdisco Inc.	23.90	-0.25	-1.08
OTC	16.25	8.88	LDI Corporation	14.50	-0.75	-4.92

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Computer security battle looms overseas

Experts point to successes in securing systems from domestic attackers, see global challenge ahead

BY MICHAEL ALEXANDER
CW STAFF

MIAMI — The computer security profession is winning the battle to protect security systems from attackers inside and outside corporate America, but reinforcements will be needed to win the war on a global scale, according to some security practitioners.

"We have met the enemy, and he is us," said Thomas Peltier, information security specialist at General Motors Corp.

Peltier kicked off the 18th Annual Computer Security Conference and National Exhibition, which was held here last week, with a keynote speech that explored the critical issues facing the security profession in the 1990s and beyond.

Security practitioners must do a better job of "fulfilling the business needs" of their organizations, Peltier said. Security and auditing functions need to be more closely allied with the aims of an organization's business units, he said.

The rapid march of computer networks, especially those that traverse international boundaries, will be among the most significant challenges facing security practitioners, Peltier said.

That view was echoed repeatedly by speakers in several conference sessions and by many of the approximately 1,000 conference attendees.

The explosion in the number of people with access to computers worldwide will bring a corollary boost in the number of outlaw hackers from overseas, Peltier said. "They will be in your computer in a New York minute and take their Texas time playing with it," he warned.

Mainframe network security is a "growing concern" because global "networks are increasing faster than our ability to protect them," said Lloyd Tanaka, manager for international marketing at CKS Software NA, a European software development company. "The 1990s should serve as our wake-up call to not only the complexities of connecting these large international networks but securing them."

Patchwork solutions

While there are solutions to protecting mainframe systems, they are not available from a single source and thus require a less secure patchwork of methods, Tanaka explained.

"The No. 1 problem is globalization," agreed Patrick Curley, data security specialist at Ford Motor Co. in Dearborn, Mich. According to Curley, the challenge of integrating disparate mainframe computer systems in different countries will be to ensure that all of the possible loopholes are plugged, he said.

General Motors revs up wide-scale security plan

General Motors is preparing to launch a wide-scale information and computer security program next month.

In a satellite broadcast to top managers on Nov. 6, Robert Stempel, GM's chairman and chief executive officer, endorsed a corporatewide security program aimed at staunching the proprietary data leaks that have plagued the giant automaker in recent years.

The executives were directed to appoint an information security coordinator for each of GM's groups and divisions, fund the positions and support them with clerical help, said Thomas Peltier, information security specialist at GM.

About 50 coordinators, largely middle managers, will be selected for the security posts by December.

The security coordinators, who must possess computer skills, will begin an 18-month training and employee awareness program in January, according to Peltier.

The program is intended to teach coordinators about aspects of information and computer security and how to present the new policies and procedures to employees.

In one phase of the program, the coordinators will be charged with identifying the owners of information and applications stored in the corporation's computers. In another phase, the coordinators will classify computerized data and establish controls for its access and dissemination.

The new program is designed to curb the outflow of classified GM information, Peltier said. In a bid to "empower employees" and boost quality, GM allowed too many of its employees unrestricted access to company data.

"We gave them too much information, and that hurt us," Peltier said.

MICHAEL ALEXANDER

Making Unix Safe

At the 18th Annual Computer Security Conference last week, Unix System Laboratories, Inc. (USL) and Unix International, Inc. announced the formation of Safe Computing, a group that aims to promote computer security for end users.

Safe (short for Security Alliance For Enterprise) Computing is open to OEMs, value-added resellers, independent software vendors and end users. Amdahl Corp., AT&T Federal Systems, Oracle Corp. and Informix Software, Inc. are among the nine companies that have already joined the group.

Enterprise computing systems are growing larger and more complex, requiring greater awareness of security, said Mike DeFazaio, executive vice president at USL. "Safe Computing will show end users that open systems and security is not a paradoxical relationship."

Safe Computing will focus its efforts on the use of Unix System V and related products in the commercial world. It is also establishing a technical work group to address security in the distributed open systems environment.

MICHAEL ALEXANDER

OTA says full speed ahead on risky fingerprint project

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — The Office of Technology Assessment (OTA) of the U.S. Congress last week strongly endorsed a plan by the Federal Bureau of Investigation to overhaul its semiautomated system for fingerprint matching, storage and retrieval, but it cautioned that the project is fraught with risk.

Despite the risks, the OTA said the FBI should press on without delay, citing "the large number of criminal justice decisions made erroneously each day due to untimely or incomplete . . . fingerprint and criminal record checks."

Most states have Automated Fingerprint Identification Systems (AFIS), which have proven to be faster, more accurate and more cost-effective than manual fingerprint checks, the OTA said. But the FBI's existing system is "a partially automated system that is technically obsolete and incompatible with the advanced AFIS used by the states," the congressional think tank said. With postal delays, a fingerprint check can take as long as 60 days — far too long for many criminal justice needs, it said in a 40-page analysis.

Matches in minutes

With the FBI's new system, fingerprint matches will be possible in minutes, making it feasible to book suspects and set bail. A suspect's fingerprints can be taken locally and scanned with digital images. They can then be sent electronically to the FBI's proposed identification center in Clarksburg, W. Va. The results of a subsequent computer match, including the suspect's identity and criminal record, will then be sent back to the local law-enforcement office. The FBI hopes to be able to complete searches in criminal cases within two hours.

The FBI estimated it will invest $600 million during the next four years on its fingerprint modernization program, including $200 million for a new building in West Virginia.

OTA project director Fred B. Wood said the $400 million estimate for systems includes $100 million for 450 specialized minicomputer-class "fingerprint matchers," $100 million for controlling mainframes and optical and digital storage, $100 million for telecommunications equipment and lines and $100 million for computers for related crime applications.

The OTA said the impact of the new system on operating costs is not known, but it acknowledged that the FBI is assuming labor productivity will increase by 50% to 100%.

Some of the technology, such as laser scanning fingers for inkless capture of print images, is advanced, but it is the data volumes and turnaround requirements that make the project risky from a technological point of view, the OTA said.

The FBI system will process volumes much greater and maintain files far larger than exist in even the largest state systems. By the year 2000, fingerprint "cards" could come into the Clarksburg facility for matching at rates as high as 100,000 per day, and the database will hold prints for 34 million people, with each person's prints using about 1M byte of storage.

Little room for error

According to the OTA, the project is risky because "the automation schedule . . . is very tight and allows little if any margin for error."

The FBI expects to issue a request for proposals early next year and make an award for system development based on prototypes early in 1993. It would like to begin installation in the spring of 1994 and become fully operational in June 1995.

Nevertheless, the OTA said some risk is unavoidable because simple extensions of existing technology may not be feasible. In any case, the OTA said the costs of inadvertently releasing repeat offenders, detaining innocent people because of misidentification and failing to solve serious crimes far outweigh whatever cost savings might accompany a slower approach.

In a statement, Rep. Don Edwards (D-Calif.) said, "At a time when increasing reliance is being placed on criminal history records for pre-employment background checks, lawmakers often overlook the poor quality of existing databases — particularly in terms of missing dispositions — and the necessity of using fingerprints to avoid misidentity. This report properly emphasizes these two areas."

Microsoft bolsters applications, plugs holes

BY JAMES DALY
CW STAFF

REDMOND, Wash. — Microsoft Corp. painted the future of its billion-dollar applications division with a broad brush last week, unveiling a handful of upgrades for key office software packages and laying out far-reaching plans that left virtually no applications area untargeted.

The introductions ranged from beefing up old workhorses such as its Microsoft Word word processing and Mail networking packages to offering the company's first business productivity application to incorporate multimedia.

Chairman Bill Gates also broadly hinted that Microsoft will soon offer a database package, displaying a slide on future directions that included a database entry. A flat-file database manager code-named Approach is reportedly under development in the company's research and development laboratories.

The announcements came at a dawn-to-dusk briefing in which top Microsoft executives vowed to take a bite out of the market share of other vendors in the increasingly competitive desktop software market. "If some people think that we're not after Lotus or Borland or Wordperfect, they're confused," Senior Vice President Mike Maples said.

For instance, the company said it is developing technology to accept Lotus Development Corp.'s 1-2-3 macros directly into its rival spreadsheet offering, Excel. Previously, users could translate some, but not all, macros. "The issue of running 1-2-3 macros in Excel has been kind of an obstacle and has prevented us from getting some Lotus users to move," said Hank Vigil, a group marketing manager at Microsoft.

The right stuff

Analysts said the nearly $2 billion company has the technological and financial resources to fulfill those promises.

"Microsoft isn't just an operating system company anymore; they're targeting every application, including some for industries like multimedia that are only just beginning to emerge," said John Dunkle, president of Workgroup Technologies, Inc., a consulting firm in Hampton, N.H.

The introductions were seen as psychologically vital to Microsoft, which is facing increasing pressure in the Windows market and needs to appear as if it, too, is moving forward. Lotus and Wordperfect Corp. have both recently announced splashy new packages, and Borland International, Inc. has given numerous peeks at the Paradox database and Quattro Pro spreadsheet that it expects to release early next year.

Microsoft officials promised to deliver a new version of the Excel spreadsheet, the Powerpoint presentation graphics package and the Project management application for both the Apple Computer, Inc. Macintosh and Windows platforms next year. Software vendors are using competitive upgrade programs to keep customers loyal.

Microsoft joined in the competitive upgrade slugfest with a recently announced offer for its four leading applications: Excel, Microsoft Word, Powerpoint and Project. The program allows users of other spreadsheet, word processing, graphics and project management applications to purchase the equivalent Microsoft application for as little as $129.

Among the newly introduced products, analysts said, is the $199 multimedia edition of Works for Windows Version 2.0, which stands the greatest chance of carving out a new market niche. The multimedia edition will prime the entry-level integrated office automation package with added graphics and audio features.

Clear message

"Microsoft's message is clear: They want to drive multimedia down to every desktop, and they're doing that by making it affordable," said Jesse Berst, editor of the "Windows Watcher" newsletter.

Although the new offering makes multimedia affordable, users will still need to provide significant computational muscle to drive the application.

An entry-level multimedia setup typically includes an Intel Corp. 80386SX-equipped personal computer or higher, a compact disc/read-only memory drive, at least 2M bytes of random-access memory, a 30M-byte hard disk, standard or enhanced IBM Video Graphics Array graphics, enhanced audio and the Windows multimedia extensions — additions that could add several thousand dollars to the cost of a typical PC configuration.

Applications galore

Microsoft announced the following products and delivery dates at last week's briefing:

- **Open Database Connectivity:** A database connectivity application programming interface that allows Windows and non-Windows applications to communicate with relational and non-relational DBMSs. Developer's kit is slated to ship in the first half of 1992.
- **Microsoft Works for Windows, Multimedia Edition:** Product features the addition of digital sound, animation and pictures to the on-line tutorial and reference sections of Works for Windows. Priced at $199, it is slated to ship in December.
- **Microsoft Word for the Macintosh:** Version 5.0 includes features such as an integrated grammar checker, drag-and-drop text and a new Print Merge Helper, as well as full support for Apple's System 7.0. Priced at $495, it is scheduled to ship in early January.
- **Object Linking and Embedding SDK for the Macintosh:** Microsoft is making its OLE SDK available for the Macintosh. Currently in beta testing at 50 developer sites, it is expected to ship in January.

DEC, Microsoft link arms on Windows

CONTINUED FROM PAGE 1

IMS, VSAM and DB2 and a variety of SQL-compatible databases on other vendors' servers.

Decreport for Windows enables users to generate reports using the above files as well as Microsoft's Excel and Borland International, Inc.'s Dbase files.

Through Pathworks, Windows 3.0 applications can access a variety of LAN SQL servers, including the Microsoft/Sybase, Inc. SQL Server, Borland's Dbase IV and Novell, Inc.'s Netware SQL databases, according to DEC.

Teamlinks also hooks Windows applications up to DEC's All-In-1 Integrated Office System Server for VMS, which acts as the coordinator between a variety of client systems and services, such as file-sharing, E-mail and database access.

The main drawback of DEC's solution for resource-sharing among Windows, DOS and Apple Computer, Inc. Macintosh clients is that it still requires All-In-1 services, which in turn require a VAX/VMS host costing about $200,000, said Frank Dzubeck, president of Communications Network Architects, Inc., a Washington, D.C.-based consulting firm.

While DEC shops will not balk at adding another host, LAN users attempting to integrate their client/server system from the bottom up are more likely to turn to a LAN server solution such as Novell's or a SQL database server such as Gupta Technologies, Inc.'s, Dzubeck said.

Also expected from DEC are the following:

- Decreport for Windows Version 1, a report generator for nontechnical professionals that is said to provide direct access to local Excel spreadsheet and Dbase database files.
- All-In-1 Manager for LANs, which is said to provide All-In-1 services such as mail directory coordination, E-mail handling and routing, security services and software distribution services to MS-DOS LANs. The product is said to support Pathworks, Netware and Banyan Systems, Inc. LANs.
- All-In-1 Desktop for Macintosh is said to allow Macintosh clients to access All-In-1 services on a VMS host, using the familiar Macintosh user environment.

A DEC spokesman said last week at a briefing held at Microsoft's Bellevue, Wash., facilities that Microsoft will provide training and support to DEC's sales and support organization. DEC will distribute, manufacture, sell and support upcoming DEC-optimized versions of Microsoft's Powerpoint, Excel, Word and Visual Basic packages, the DEC spokesman said.

"I have to believe this is a good thing," said John Brauksieker, MIS director at Protein Technologies International, Inc. in St. Louis.

Brauksieker added that Protein Technologies, a large DEC VAX shop, is a heavy user of Windows. "Users have to take advantage of these situations, such as Apple/IBM and DEC/Microsoft. When things get this competitive, it can only mean good things for the user," he said.

In whatever manner customers may be greeting the news, analysts said they feel the partnership is in large part an answering volley to the IBM/Apple alliance. Not only did the Microsoft/IBM relationship crash on the rocks, but Apple is also suing Microsoft over windows technology. DEC has a close, communications-oriented relationship with Apple.

"Microsoft is going to kick IBM where it hurts — in the office," observed Stuart Woodring, an analyst at Forrester Research, Inc. in Cambridge, Mass.

"For the users, the question is, is this a long-term strategic relationship or just tit-for-tat on the IBM/Apple announcement?" said John Logan, vice president at Aberdeen Group, a Boston-based research and consulting firm.

Senior Editor Rosemary Hamilton contributed to this report.

European tour

DEC last week disclosed its intention to distribute Apple's Macintosh computers to its European customers. The agreement also calls for Apple's dedicated reseller network in Europe to distribute DEC's interconnect products, its VAX and reduced instruction set computing servers and Apple-related desktop services.

A DEC spokesman at the company's Maynard, Mass., headquarters acknowledged that the companies are considering a similar type of agreement in the U.S.

"Something may happen in the next month or so," spokesman Dallas Kirk said, adding that it would be impossible to speculate at this point what type of effect a similar agreement would have on DEC's U.S. sales and services.

The distribution announcement was made at the DEC partners symposium in Vienna, and the final agreements are expected to be concluded early next year.

John Logan, vice president at Aberdeen Group, a Boston-based consulting firm, said the arrangement is "about three years late," but he added that he feels it will benefit both vendors and customers.

"They are telling us that installing an Apple Macintosh is an excellent way to get a terminal on the desktop for $1,000," Logan said. "And this would certainly help DEC's systems integration business."

SALLY CUSACK

NEWS SHORTS

Covia, partners win airport bid

Covia Corp., Mitsubishi Electric Corp. and IBM Japan together recently won a $29 million bid to develop a passenger information system for Japan's new Kansai International Airport. The system will be designed to provide passengers with real-time flight and baggage information through voice and video systems. In addition, the system will handle flight scheduling and passenger processing as well as operational information for airport personnel. Development is scheduled to begin next month, and a completion date has been set for the second quarter of 1994.

New Inslaw probe planned

Attorney General-designate William Barr said last week he will appoint a federal judge as special counsel to investigate the U.S. Department of Justice's theft of case-tracking software from Washington, D.C.-based software developer Inslaw, Inc. Former Attorney General Richard Thornburgh was accused by a congressional panel of "stonewalling" its probe into the affair, which has already resulted in two court decisions supporting Inslaw's charges [CW, April 1]. A third court threw out an $8 million award to Inslaw, saying the original court lacked jurisdiction in the matter.

Timeplex adds to enterprise

Networking company Timeplex, Inc. last week said it has outfitted its T1 multiplexers with public network access capabilities, including inverse multiplexing (see story page 53). The firm said it has also expanded its Timeview network management system to manage Timeplex X.25 packet switches. Timeview currently manages Timeplex's T1 and T3 multiplexers, Simple Network Management Protocol (SNMP)-compliant routers and other SNMP devices. Faster automatic rerouting capabilities and a Sun Microsystems, Inc. Sparcstation-based network management system have also been added to the company's T3 offerings.

Microsoft and Banyan team up

Tearing a page from their competitor's playbook, Microsoft Corp. and Banyan Systems, Inc. have formed a technical support alliance. Under the pact, each will take responsibility for support calls that involve the other. Users have long bemoaned the habit many computer vendors have of washing their hands of problems not clearly caused by their own products. Banyan and Microsoft will train each other's support staff, exchange products and share technical databases.

Mtel aims for wireless net

Mobile Telecommunication Technologies Corp. (Mtel) last week filed a petition with the Federal Communications Commission that would enable Mtel to create a nationwide wireless network for two-way data transmission. The petition calls for the FCC to allocate three 50-kHz channels, which could then be used by portable palmtop and notebook computer users to exchange high-speed messages, Mtel said.

Intel drops print server price

Intel Corp. cut the price of its Token Ring Netport print server from $1,195 to $995 last week. The chip maker cited market pressures as the reason behind the price drop. Netport, which is produced at Intel's networking division in Hillsboro, Ore., connects clients and servers to printers on Novell, Inc. Netware networks over Token Ring.

User-friendly FOIA proposed

U.S. Sen. Patrick J. Leahy (D-Vt.), chairman of the Senate Subcommittee on Technology and the Law, has introduced a bill designed to bring the 25-year-old Freedom of Information Act into the computer age [CW, April 29]. Because some agencies balk at providing information in electronic formats, the bill would require agencies to make reasonable efforts to provide government data in whatever form the requester chooses.

Kodak IS exec broadens scope

BY CLINTON WILDER
CW STAFF

ROCHESTER, N.Y. — Eastman Kodak Co.'s landmark 1989 outsourcing deal is a success by at least one measure: the career track of the information systems chief who hatched the idea.

Last week, Kodak gave Corporate Director of IS and Vice President Katherine M. Hudson the additional job of director of IS and processes for the company's beleaguered Imaging Products Group — Kodak's largest business unit. In essence, Hudson is charged with redesigning that unit's business processes through the use of information technology.

The imaging unit, which after numerous strategic setbacks has allied itself with IBM, Lotus Development Corp. and Novell, Inc., will use information technology to shorten product cycles and better gauge customer requirements, Hudson said.

For Hudson, 44, the new responsibilities represent a return to line management. She began her career as a systems programmer but later ran Kodak's short-lived instant photography unit. Hudson reports to Kodak Chairman Kay Whitmore and to Leo J. "Jack" Thomas, head of the imaging unit.

Kodak's Hudson *redesigned firm's Imaging Products Group*

"Jack Thomas believes in elevating the importance of IS as a major force in re-engineering," Hudson said. She said her 1989 decision to outsource Kodak's data center operations, telecommunications and personal computer purchasing and support — which at the time raised eyebrows throughout the IS community — has boosted the credibility of IS in the minds of Kodak's top executives.

It helped convince senior management that IS should be more concerned with business strategy, she said. "It used to be somewhat embarrassing to go into a business strategy meeting and have to ask for another $4 million to $5 million to upgrade [an IBM] 3090," Hudson said. "Unless you can say that owning these boxes is critical to your business, I would let go of them."

A new 189,000-sq-ft data center built by IBM to support Kodak's information systems opened this past summer.

Hudson said the outsourcing deal — data centers to IBM, telecommunications to Digital Equipment Corp. and PC support to Businessland, Inc. (now JWP Businessland) — is saving Kodak more than 30% in IS costs. Kodak's annual IS budget is $500 million.

Oracle leads manufacturing product blitz

BY ELLIS BOOKER
CW STAFF

CHICAGO — A walk past the smoothly running workstations and computer-controlled machine tools at last week's Autofact '91 conference and exhibition suggested a paradox: If U.S. manufacturers have access to so much technology, why are they often beaten to the punch by European and Japanese competitors?

Technologists have badly "underestimated the inertia of [manufacturers'] organizational infrastructures," said Joel N. Orr, chairman of Orr Associates, Inc. in Virginia Beach, Va.

In an apparent reaction to this, Julie Fraser, a senior industry analyst at Advanced Manufacturing Research, Inc. in Cambridge, Mass., said, "The big computer vendors are focusing a lot of energy on integration and services rather than products."

Fraser noted, however, that despite being cash-poor, "manufacturers do know they need an architecture when things turn around for them."

Meanwhile, some vendors are convinced there are opportunities for them even now.

Oracle Corp. last week unveiled a solution for what analysts have dubbed "enterprise resource planning."

Oracle Manufacturing Version 3.2 contains a total of 19 new software products in four categories: materials management, shop-floor control, planning and engineering.

The new software will be expanded to other Unix and non-Unix systems within six months, Oracle Vice President Don Klaiss said.

Among other announcements at Autofact were the following:

- Control Data Corp. in Minneapolis said it would bring its ICEM computer-aided design and manufacturing software to the IBM RISC System/6000 and the Hewlett-Packard Co. 9000 Series 700 early next year.
- Cimlinc, Inc. in Itasca, Ill., unveiled Linkage, a new line of software products for managing integrated, multimedia work instructions on Unix engineering workstations.
- Thompson Digital Image America, Inc. announced Interactive Photorealistic Rendering, a rendering technology that combines interactivity and increased photorealism.

Mips unleashes design kit for ACE-complaint machines

BY MARYFRAN JOHNSON
CW STAFF

SUNNYVALE, Calif. — Hoping to boost the momentum of the Advanced Computing Environment (ACE) alliance as well as its own revenue, Mips Computer Systems, Inc. will unveil today a pair of do-it-yourself hardware design kits using the R4000 reduced instruction set computing (RISC) chip.

Mips' Reference Arcsystem Program will sell design kits, chip sets, software binaries, source code and technical support to firms using the R4000 microprocessor to build computers complying with the Advanced RISC Computer (ARC) specification from ACE. Pricing will be based on royalty fees set for certain volume shipments.

"This could strengthen the ACE momentum, which I think is building," said Wes Melling, an analyst at Gartner Group, Inc. in Stamford, Conn.

Immediately available will be the Arcsystem 100 Design Kit, which includes everything needed to manufacture an ARC-compliant board. It is intended primarily for personal computer clone vendors with few engineering resources to spare, said Cynthia McCulley, director of platform licensing at Mips.

The standard design kit should enable hardware vendors to have a system ready to ship when Microsoft Corp. releases its Windows New Technology next year, she added.

PC buyers hold out for better deals

CONTINUED FROM PAGE 1

from the same quarter last year and the largest quarter yet for application software sales.

In the face of this constant maneuvering for market share, users are balancing immediate purchasing needs against longer term requirements, hoping they can achieve superior buying power a little further down the line.

Analysts estimated that the reluctance to increase short-term spending is going to fuel hardware price wars for the next six to nine months.

"We aren't jumping on the cuts because the days of buying computers in huge quantities are over. We tend to buy three, four and five at a time," said Enrique Crespo Jr., corporate manager of computing services at The Torrington Co. in Torrington, Conn.

Fighting back

As top-tier vendors such as IBM and Compaq Computer Corp. react to the clone threat with shorter product cycles and aggressive pricing, the ripple effect will result in a "30% to 40% shakeout in the lower echelon," according to Frank Michnoff, program director of desktop computing strategies services at Meta Group, Inc. in Westport, Conn.

"And it's going to happen just as the lower tier players are beginning to get market share," he pointed out.

Although ordinarily users are interested in end-of-year deals, Michnoff said, many are pacing themselves because they believe they can get better deals as the price war persists.

"We're balancing it out," agreed John Biglin, a personal computer analyst at General Waterworks Management and Service Co. in King of Prussia, Pa. "If you have to buy, you do. But we're waiting to see if prices drop further."

Biglin also said that his company, which purchases PCs for a nationwide network of utilities, is looking to get more for its money. "Instead of a 25-MHz 386, we're getting a 33-MHz box," he said.

While desktop hardware is a commodity item, the software side of the equation is still adding enough value to avoid the severe bloodletting under way in the hardware arena.

While the introduction of competitive upgrades has resulted in some bargains, Tom Wood, a senior industry research analyst at Business Research Group in Newton, Mass., said software pricing, unlike cost-based hardware pricing, can afford to come down. "The room to bring prices down is there: $495 used to be the magic number, but I don't think it's going to remain there," he said.

Deepening gloom

Hardware vendors won't be watching many *Dirty Harry* movies these days: They don't feel lucky.

Where box prices were once chopped on an annual basis, IBM alone has had four price reductions within the past 12 months. And the stormy weather is far from over. Look for the following trends in the coming year:

- **More of the same but worse.** Analysts and vendors agreed that prices will be on the skids for at least the next six to nine months. Compaq estimated that while unit sales for the coming year will go up, revenue will be flat or slightly down.
- **Entry-level emphasis.** With a major new emphasis for the top-tier vendors, there should be a big push to sell boxes that are marked more by bargain price tags than by high-end add-ons. Product life cycles will be shortened, and many more components will come from third-party sources.
- **Increased emphasis on nontraditional dealer channels.** From reports of IBM's toying with mail order to Compaq's jilting of its traditional dealers, vendors will be moving products out of every conceivable door.

CAROL HILDEBRAND

Software futures

Look for the following software movements:

- **Discount guarantees on future products.** These guarantees were designed to eliminate user worries about impending upgrades and platform changes, encouraging users to buy now rather than wait.
- **Unbundling support.** Companies may unbundle support from complex products as the costs of training support staffs climb and software prices drop. Instead, users will pay lower prices for software and buy support as they need it.
- **Third-party support programs.** Such programs offered through resellers such as Corporate Software and independent consultants may become more prevalent.

CHRISTOPHER LINDQUIST

Citicorp overhauls corporate network

CONTINUED FROM PAGE 1

The technologies include Switched Multimegabit Data Service and frame and cell relay — beefed-up wide-area services that "are driving us inexorably to using the capacity of the common carriers," Crook said.

The network consolidation project speaks to Citicorp's business challenges in beefing up a bottom line that saw an 80% drop in earnings for its third quarter, ended Sept. 30. In addition, more centralized control could guard against some vulnerabilities of decentralization.

For example, the bank's Citicorp Establishment Services' fraudulently overstated revenue — which was recently discovered and resulted in the dismissal of several key executives. This might have been less likely with more centralized management, analysts said.

Citicorp's first goal, when the networking project officially kicks off Jan. 1, is to gain "quick wins" by consolidating bandwidth use into one global network to eliminate any wasted network capacity, Crook said. For example, two sites running three T1 links each with some leftover bandwidth will probably be able to double up on two T1 lines and fill the capacity, Crook explained.

The bandwidth savings will justify installing additional alternate routes in Citicorp's network design because "a single point of failure is the nightmare that you constantly worry about," Crook said.

On the customer service side, the network aims to support globally expanding customers that need their financial needs met simultaneously across geographic boundaries, Crook explained. Citicorp plans to meld local- and wide-area networks in its 100-plus business units spanning 92 countries and in the process plans to leverage its now-piecemeal global strength for solidified corporate buying clout and reduce the number of vendors it deals with.

Bill Herald, a partner at Ernst & Young's Network Strategies Practice in Fairfax, Va., said his firm has had informal discussions with Citicorp about its network strategy and has participated in the firm's data center consolidation, already in progress. One of Citicorp's hurdles with the project, Herald said, will be managing the cultural changes inherent in centralization.

"It's a tremendous political and cultural challenge to tell very educated, IS-savvy users in the business units to think about applications and not the infrastructure," Herald said. "But the infrastructure is really the concern of the chief information officer today."

Amdahl alerts users about defective 6380 K disk drives

CONTINUED FROM PAGE 1

Only a fraction of these 6380 K users were affected by head disk crashes, Amdahl said. Random interviews with Amdahl users last week failed to turn up any substantial difficulties with the Amdahl 6380 K drives.

On the advice of consultants, Amdahl decided to notify all customers who received 6380 K drives this summer. A letter was sent to customers late last month, Stewart said, asking them to make an appointment to have all the disk enclosures replaced "at a convenient time."

The enclosures and filters that are removed will be studied in clean-room facilities to examine them for defects, Stewart said, adding, "We are going to check them all.

"We were aware that some of these drives had a problem," Stewart said. "The cause of the problem was identified in late October. It involved an internal filter that scrubs the air inside the disk enclosure to make sure no particulate matter collects on the [read/write] heads." A new type of filter was used from June to September, but now Amdahl has returned to the original filter design in the wake of the defective filter recall.

The troublesome filters had shown a failure rate of 2% to 3% — automatically tagged as too high by Amdahl field service engineers, because a failure rate greater than 0.5% is considered unacceptable. Because each of the 1,000 disk drive units has four head-disk assemblies (HDA), a total of 4,000 HDAs and disk enclosures are affected, Stewart said.

Industry analysts praised Amdahl for facing up to the problem squarely — and for doing something about it before rumors began to boil up in the installed base. "What they told customers was that they had a bad batch and that, over a period of time, those disk drives would not do the job," said Carl Greiner, who manages the storage portion of Gartner Group, Inc.'s Large Computer Strategy Service. "They have been proactive on it, let their field engineers in on it. And those customers who were most exposed [to the potential disk failures] got the first fixes."

Amdahl is the only one among the top three providers of IBM-compatible equipment that is not yet shipping its IBM 3390-generation disk drive. The company said last week that it will begin shipping 6390s in December and that the 6390s will be available in volume "later in the first quarter" of 1992. IBM has been shipping its 3390s since late 1989, while competitor Hitachi Data Systems Corp. began shipping its 7390s in October 1990.

Second-class postage paid at Framingham, Mass., and additional mailing offices.
Computerworld (ISSN 0010-4841) is published weekly, with a single combined issue for the last week in December and the first week in January by CW Publishing/Inc., 375 Cochituate Road, Box 9171, Framingham, Mass. 01701-9171.
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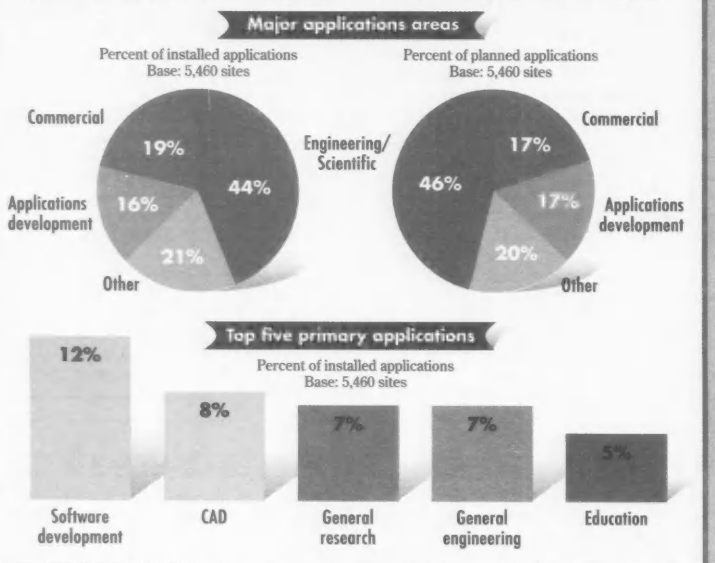
TRENDS

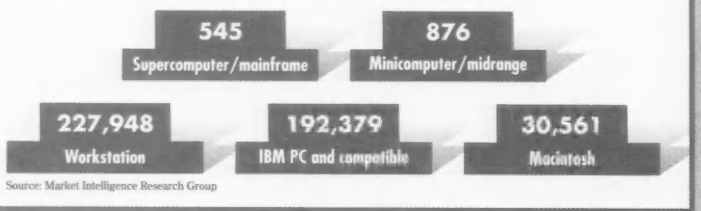
UNIX SOFTWARE

Well established in the scientific community, Unix continues its struggle in other markets

Despite the attention given to commercial Unix use, Unix systems dedicated to commercial applications are not expected to show immediate growth in the near future



Workstations remain the primary platform for Unix licenses, accounting for the most shipments in 1991



Source: Market Intelligence Research Group

Source: Computer Intelligence, La Jolla, Calif.

CW Chart: Marie Haines

NEXT WEEK

Accelerating the move toward open systems is the top management issue at EG&G in Wellesley, Mass. At this Fortune 200 high-tech components company, IS Chief **Bob Curran** is replacing proprietary platforms with Unix-based workstations and realigning the information technology groups for greater coordination. See Manager's Journal. ▶

Steven Lewis

For all the money spent to put immense technology power into companies, you'd think U.S. firms would be more productive. But data shows they're not, and that fact may eventually hurt U.S. global competitiveness. In next week's In Depth, Harvard Business School's Gary Loveman reveals why this is so and what IS managers can do about it.

INSIDE LINES

When one is better than two

▶ After years of taking heat for maintaining two incompatible private branch exchange lines, AT&T is finally going to mesh its Definity Generic 1 (System 75) and Generic 2 (System 85) lines at Comnet '92 in January. The new Generic 3 platform will reportedly run on an Intel microprocessor at the low end and a Mips Computer Systems RISC processor at the high end. The latter is said to provide a 400% performance improvement over the Definity Generic 2 chip set.

FUD in the eyes

▶ For those who think OS/2 is a dead whale, some users are still getting companies to change products over it. AST Research's Genelle Trader, director of portable marketing, said he believes customers who had stopped buying AST's notebook computers kept their pocketbooks closed until AST promised it would get them certified to run OS/2's Extended Edition. Trader said he expects the notebook to be certified before the end of the year.

And the beat goes on

▶ Chalk up another in the seemingly endless string of highly placed executives at SHL Systemhouse. The Ottawa-based systems integrator is poised to announce the arrival of Steven Stiling, former head of Computer Sciences' Communications and Integrated Services Division, to head up and expand Systemhouse's Northeast region, working out of New York. The integrator recently raided Andersen Consulting for top-notch talent. That's not too surprising, since SHL's chief executive formerly was Andersen's No. 2 partner.

Slow on the draw

▶ When Lotus announced its upgrade pledge policy, which was to have required users to destroy either the software they upgraded from or the new product after 90 days, Borland was apparently ready to retaliate. But Lotus withdrew the policy before Borland could begin shipping its "101 Uses for Your Old Copy of 1-2-3" pamphlets. A Borland spokesman said the list would have included "a footrest" and "a doorstop."

Going modular

▶ Everex will use PC Expo in Chicago to formally introduce its new Tempo M line of modular desktop computers and a lightweight notebook computer, the Tempo Carrier. The Tempo M line will have a passive backplane that will allow processor upgrades from a 386SX to a 33-MHz 486DX. The Tempo Carrier (code-named the Tempo VX) is based on the 386SX chip and will weigh 5.3 pounds.

Grudge match

▶ Compaq's promise to go low end is generating high-level reaction at some clone makers. For instance, AST Research's Tom Yuen, co-founder and COO, felt compelled to circulate a memo last week to some firm executives. While the title was all we heard, it spoke of challenge: Compaq vs. AST.

On the rebound

▶ At Microsoft's application direction briefing last week, Senior Vice President Mike Maples was dutifully running down all the reasons why his company should team up with DEC — its position as a leader in office systems and its extensive service and support network, among others. Strangely, he forgot to include the most obvious one: It ain't IBM.

Many of the attendees at the 18th Annual Computer Security Conference held in Miami last week got their first view of a Van Eck antenna in action, at least for a short while. The device, named after Winn Van Eck, the Dutch professor who developed it, can be used to intercept data emanating from computer monitors. Hughes-STX Corp., which exhibited the device along with methods to combat electromagnetic eavesdropping, was ordered by the supersecret National Security Agency to stop using it at the conference, according to Morgan Death, the company's vice president. Any leads on prospective saboteurs? Call our News Editor Alan Alper at (800) 343-6474, fax him at (508) 875-8931 or Compuserve him at 76537,2413.

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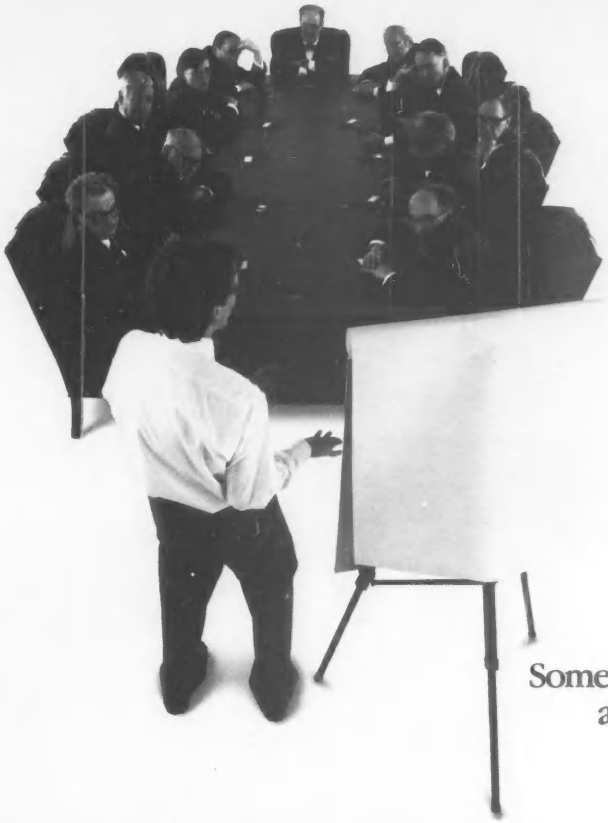

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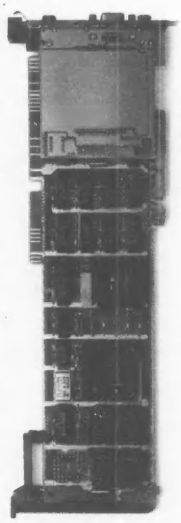

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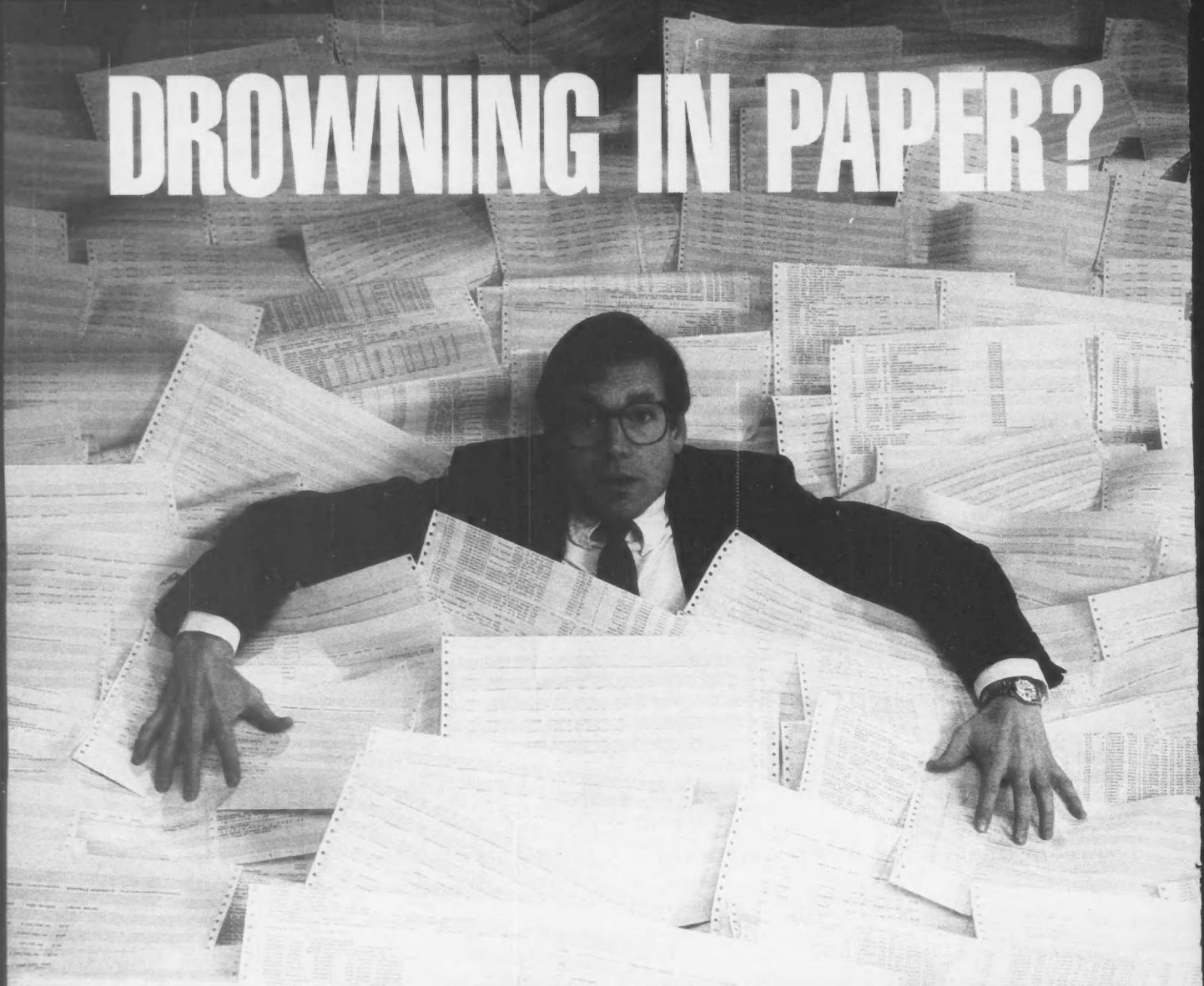

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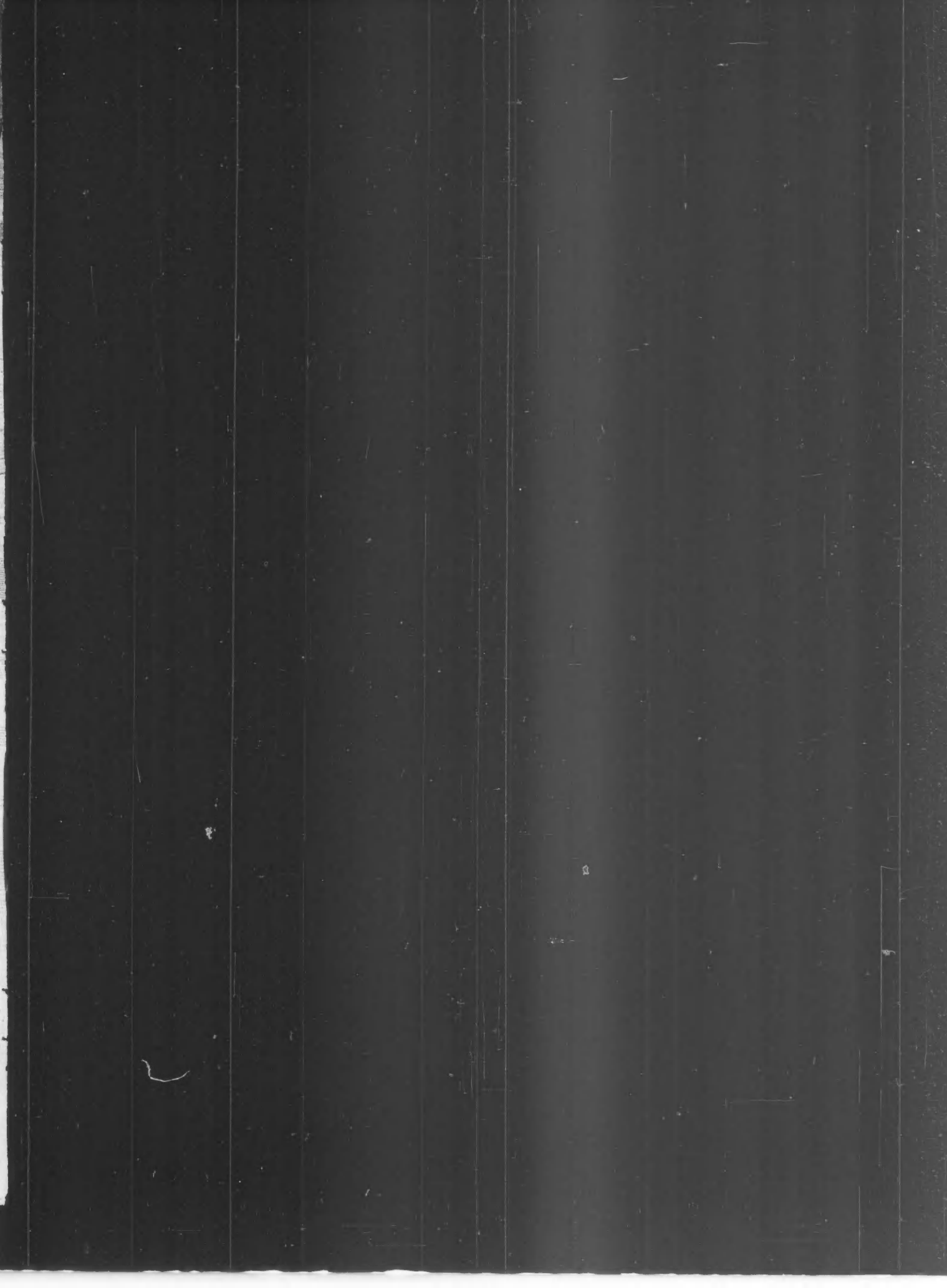
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